# Machine and Tool BLUE BOOK

A DIGEST OF THE METAL WORKING INDUSTRY

#### **MAY 1949**

#### THIS MONTH

Cylinder Block Processing Machine

Welding Automobile Bodies

**NMTBA Sales Refresher Course** 

**Shop Hints** 

What's New in Metalworking

Available Literature

Advertisers' Products Index

Index to Advertisers

COMPLETE INDEX ON PAGE 5

A HITCHCOCK PUBLICATION



# Crucible Steel Started Something

11 years ago Crucible Steel Company's Chicago warehouse started something when they installed their first MARVEL Saws to give fast service on "cut to size" orders. Today, 9 Crucible Steel Company warehouses are equipped with MARVEL Saws, can deliver on short notice accurately cut-off lengths or slices from even the largest bars and billets, or literally thousands of identical pieces automatically cut-off at terrific speed from single or nested bars.

The above picture of the new cutting-off department in Chicago shows two No. 18 MARVEL Giant Hydraulic Saws (capacity 18" x 18") and two No. 9A MARVFL Automatic Production Saws (capacity 10" x 10").

ARMSTRONG-BLUM MFG. COMPANY

5700 BLOOMINGDALE AVENUE CHICAGO 39, U. S. A.

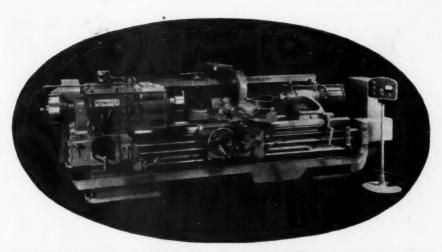
There are MARVEL-equipped Crucible Steel Company warehouses in

CHICAGO INDIANAPOLIS ST. LOUIS CLEVELAND DETROIT DENVER NEW YORK PHILADELPHIA PITTSBURGH

#### SAWING DEPT

ONE IS X IS MACHINE ONE 18" X 22" MACHINE THREE IO'X IO MACHINES ONE BAND SAW

WITH THIS EQUIPMENT WE CAN CUT YOUR ORDER THE SAME DRY RECEIVED.



# FIVE HOURS FIFTY-EIGHT MINUTES FASTER!

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With Monarch's single-tool Air-Gage Tracing, this long shaft is turned complete in two hours 20 minutes. Multiple-tool machining of the same part required eight hours 18 minutes.

Note particularly the tough metal—the depth of cut—the 103-inch length. Air-Gage Tracing takes all these in stride. Moreover, it is equally applicable to the turning of multiple-diameter shafts or to the turning, boring and facing of contours to meet almost every practical application need. Nor does size of workpiece present any limitation—as witness the job illustrated.

A constantly growing list of our customers is finding the way to reduced costs and improved quality through Air-Gage Tracing. May we show you how it will provide "peak production at a profit" in your shop?

#### JOB FACTS

Part-Extruder Shaft

Material—SAE 4150 heattreated

Hardness-320 Brinell

Operations Performed—turn complete

Maximum Cut Depth—¾"
Cutting Tool—Cemented
Carbide

Machining Time—2 hours 20 minutes

Machine—20" x 144" Monarch Model M Engine Lathe, Air-Gage Tracer-Equipped

THE MONARCH MACHINE TOOL CO., Sidney, Ohio

Mondely TURNING MACHINES

FOR A GOOD TURN FASTER - TURN TO MONARCH

# Late Model???

Is the lathe you are buying today really a late model, late in design, late in convenient features?



To be sure you really get a late model give full consideration to the Clausing 200 series lathes. Compare it with any lathe in its price class, with lathes that are above its price class. Check the ten star features and we will be satisfied that you will not be satisfied with anything but a Clausing 200 series lathe.

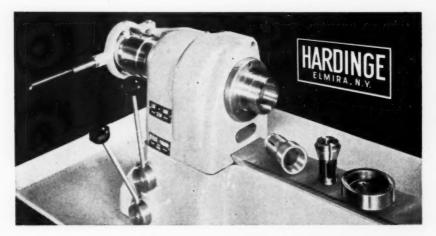
#### 10 STAR FEATURES

- "Headstock, enclosed, running in oil.
- Gear box, enclosed, running in oil.
- Convenient speed changing.
- \* Enclosed motor drive.
- Automatic lever controlled apron.
- \* Tapered nose key lock spindle.
- Spindle forged, hardened and precision ground.
- Handwheel type spindle back gear engagement.
- Back and reverse gears enclosed in headstock.
- Easily removed double drive belts.



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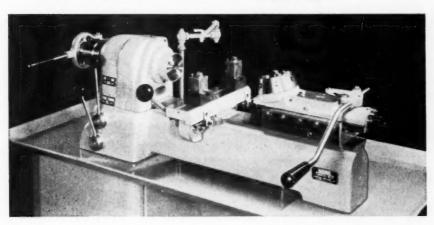
231 Richmond Ave., Ottumwa, Iowa.



# HARDINGE High Speed Precision Second Operation Machine with STATIONARY COLLET

Close observation in Production Departments reveals the need for a specific type of machine for a certain class of work. This is particularly true when close tolerances exist for length or shoulder specifications. In such instances, push-out or draw-in collets are not as satisfactory as a stationary collet arrangement.

This machine combines all the features of the model DSM59 Hardinge Second Operation Machine with the addition of the stationary collet feature (No. 21 Brown & Sharpe Style Collet) for length holding second operations. Ask for bulletin VBS.



ARMSTRONG TOOL HOLDERS



answer both . . .

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- 1. The problem of lowering costs
- 2. The problem of increasing output

By providing permanent, multi-purpose, inexpensive ARMSTRONG TOOL HOLDERS that use cutters or bits that are quickly ground from standard high speed shapes (Saving: All Forging, 70% Grinding and 90% High Speed Steel), the Armstrong System of Tool Holders will reduce your tool cost to an absolute minimum.

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49

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#### **MAY 1949**

Published Monthly	Vel. 45 No. 9
Featured in this Issue	99
As the Editor Sees it	101
FEATURE ARTICLES	
Natco Holeway Cylinder Block Processing Me by R. A. Schafer	chine103
The Responsibility of the Machine Tool Dist	ributor
to the Machine Tool Builder—(Lecture No. by L. W. Scott Alter	16)135
Analyzing Failure—(Lecture No. 17)by Jerome A. Raterman	149
Letter From London	163

#### WELDING AND FABRICATING

Modern Welding Procedures in Building Motor Cars.......121 by E. O. Courtemanche

#### DEPARTMENTS

171
271
271
272
275
276
277
278
280
284
288
291
297
299
300
303
308
310
318

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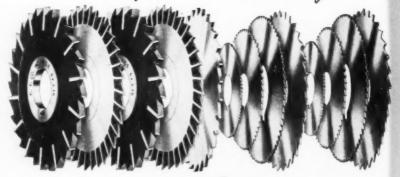
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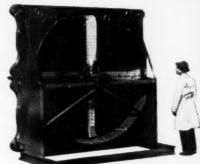


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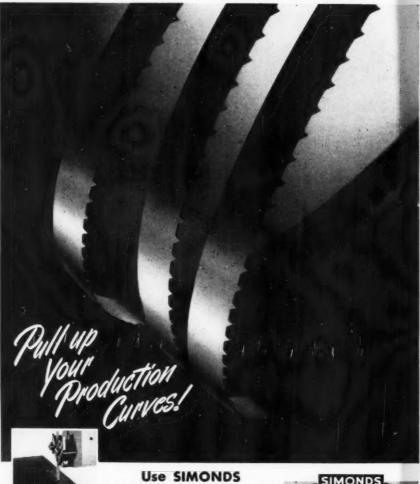
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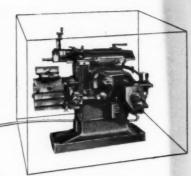
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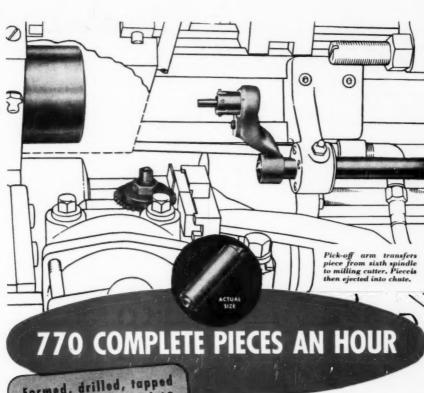
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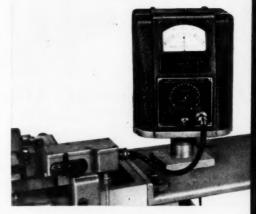
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Type

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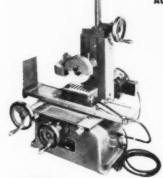
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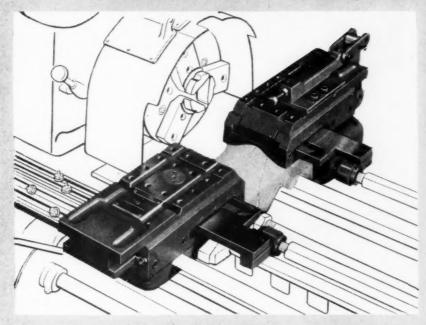


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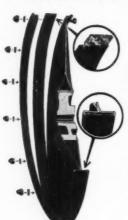
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#### AN EXTRA GOOD VALUE IN A 10" GRINDER

At left, Cat. No. 1010, the latest BALDOR development in Grinders based upon a quarter century of grinder manufacturing. Ruggedly built for long, hard production service. Has 1 h.p. ball-bearing motor; 10" wheels — one 36 grit, one 60 grit. Wide clearance between wheels and motor frame; exhaust type guards. 1-year guarantee.

\$110.00

#### ASK FOR BULLETIN 321-D

for full information on complete line of BALDOR Grinders and Grinder-Buffers.

# CARBIDE TOOL GRINDER for speed and accuracy

AT RIGHT: Special BALDOR Carbide Tool Grinder, series 500; has sturdy ½ h.p. reversible, ball-bearing motor. 6" Silicon Carbide wheels, adjustable tool rest tables and other features illustrated. Guaranteed 2 years against burn-out.

\$127.20



## BALDOR ELECTRIC COMPANY •

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Baldor Grinders and Motors are serviced by more than 200 Authorized Dealers throughout the U.S.

# 20% 200% MORE OUTPUT

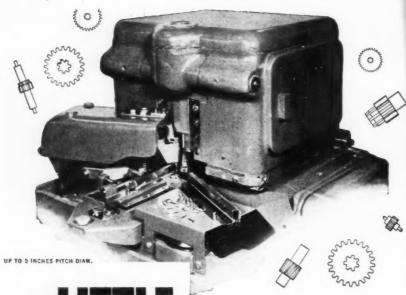
# with K-J Quick Change LATHE TOOLING

The time saving and simplifying of operations is unbelievable until actually experienced. Change from drilling to boring, to threading, turning, facing, cutoff and all other operations takes but three or four seconds and affords a permanent, ready made set-up for all standard engine lathe operations. No wrenches needed for operation changes. Rigid and vibration free, they insure closer accuracy and greatly prolong tool life. Designed to use cemented carbide tipped tool bits.

α

49

Send for detailed information. Try K-J Quick Change Lathe Tooling on any engine lathe and you will find that it really costs money to be without it, regardless of number of pieces per job. U. S. PAT. 2389858 TOOL HOLDER BASE Holds tools for all operations, enabling instant, precision changes without wrenches. BIGGSTAVA Boring tools are rigidly supported and designed to Boring tools are rigidly supported and designed to eliminate excess overhang. enminure excess overnany, instant CO. INC. Quick change tools available for straight turning, cutoff, side 3357 UNION PACIFIC AVE. forming, end-forming, threading or turning, drilling, boring, thread LOS ANGELES 23, CALIF. chasing, knurling, box turning, withing of practically any type.



# LITTLE GEARS

Fast, Accurate and at Low Cost

Small, fine-pitch gears, pinions, and precision instrument parts, can be mass-produced on the Fellows Fine-Pitch Gear Shaper with duplicated accuracy. Ganging of work on arbors, and fast-operating magazine feed, opens new possibilities for small parts production. Generating on the Gear Shaper can contribute to the quiet smooth operation of many precision devices. Descriptive literature on request.



The Fellows Gear Shaper Co., Head Office and Export Dept., Springfield, Vermont. Branch Offices: 616 Fisher Building, Detroit 2; 640 West Town Office Building, Chicago 12; 7706 Empire State Building, New York L.



# -with OLIVER DIEMAKERS

This year cost-cutting is more important than ever before. Oliver can help you—especially if you still make dies by hand.

The Oliver Diemakers shown (S-1 Bench Model and Heavy Duty) have cut costs by over 60% in some cases—paid for themselves in weeks. This is done by sawing and filing away surplus metal instead of drilling and chipping by hand.

Model S-1 is a single speed (S-4 for two speeds) Diemaker handling tool steels up to 1" thick.

The Heavy Duty model, ruggedly built, with six speeds, works in metal up to 3" thick, has a variable stroke to 5", plus a hydraulic feed.

Write today for literature describing these and other models. We feel sure you will find the right model for your use — an efficient addition to your toolroom.

OLIVER INSTRUMENT CO.

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AUTOMATIC DRILL GRINDERS TOOL & CUTTER GRINDERS—DRILL POINT THINNERS—TEMPLATE TOOL GRINDERS—FACE MILL GRINDERS—DIEMAKING MACHINIS

# DALLETT PNEUMATIC

# SCALING & LIGHT CHIPPING HAMMERS

DALLETT presents a complete line of precision made Scaling and Light Chipping Hammers: In high speed, valveless, and light, powerful coin-valve types.

ALL feature the DALLETT Safety Chisel Retainer Bushing-designed by DALLETT to hold the chisel securely, preventing piston from driving it out of hammer.

DALLETT'S KA Handle trigger throttle valve control. Coin-valve type Hammer developed for light shipping, removing fins and sand from castings and for general scaling.

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> type. Lever rettle control o of air . . . Exhaust air passes through bushing -blowing away chips or scale. The Ideal Tool for removing flux and excess metal from weld-





### THE DALLETT COMPANY

Manufacturers of Pneumatic Tools and Accessories

NEW





Specially developed for industry, shops and schools, these 11" Logan Lathes have new, greater capacity plus Logan advanced design and precision construction. Their low price range in the field of lathes with comparable specifications is the first of many economies they offer.

For LARGER WORK . . . the new Logan Lathes have 11" swing, 1" draw-in collet capacity, 1%" spindle hole, and center distances of 24" and 36".

For ACCURACY... Ball bearing spindle mounting assures sustained accuracy at any speed from 45 to 1500 rpm without bearing adjustment. Two V-ways and two flat ways of the rugged beds are precision ground to a tolerance of .0005" along lineal capacity of lathe. Total spindle run-out 12" from bearing held to within .0005".

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Available in bench, floor, cabinet and turret models.

WRITE FOR DETAILED INFORMATION ON ALL LOGAN 9", 10" AND 11" LATHES AND 8" SHAPERS

LOGAN ENGINEERING CO.

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LOOK TO Logan FOR BETTER LATHES AND SHAPERS

# Looking for Lower Cost Cylindrical Grinding

57 ALUNDUM

abrasive with its combination of sharpness and toughness is first choice for a large number of the cylindrical jobs on steel.

32 ALUNDUM

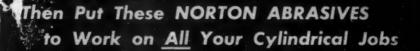
abrasive with its extra sharpness and coolness of cut is especially effective on many parts made of hardened steel.

ALUNDUM

abrasive (regular) has a toughness that makes it especially suitable for heavy stock removal, severe sharp corner wark and high production jobs.

CRYSTOLON

abrasive has the combination of hardness and sharpness necessary for cast iron and the nonferrous metals.



F you ripsaw a board with a crosscut saw you'll get the job done but you don't expect maximum efficiency. It's just the same with your cylindrical grinding jobs. There are lots of wheels that will do each job but there's only one wheel that will do each job at the very lowest possible grinding cost.

That's why Norton has several different abrasives for cylindrical grinding—each with its own special characteristics, a number of bonds and a wide variety of grains, grades and structures.

If you want to get cylindrical grinding costs down to rock bottom take advantage of this specialized Norton service. Let a Norton abrasive engineer or a factory-trained Norton distributor man study all of your cylindrical grinding jobs and make a cost-cutting specification for each one. Low grinding costs are mighty essential right now.

W-123



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3-U PANTOGRAPH Sturdy and rigid with sensitive tracer control. Larger and heavier 3-Z model also available. Bulletin 1580. P13 PANTOGRAPH \*Ratiobar Pantografor 3-dimensional work First basic design improvement in pantograph construction Bulletin 2310.

\*Trade Mark Reg. U. S. Pat. Office



375-2
CUTTER GRINDER
Universal type; bench
or floor models; capacity up to %" dia.
including ball nose and
multi-flute cutters.
Bulletin 1517.



DER bench capac-dia. se and 172 long slender parts from .005" dla., by 2°14" long. 172 long to 152" (141, by 2°14" long. 172 long to 152" long. 174 long. 17

GEORGE CORTON MACHINE CO.

1405 Racine Street, Racine, Wisconsin, U. S. A.

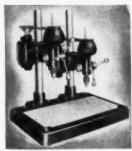
For brief facts about the Gorton line of tracercontrolled machines, use coupon or company letterhead and request Bulletin 1655 illustrated above. For specific information on cortain machines, see text accompanying each illustration.

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#### Simple, Rugged Design TO CUT YOUR COST PER HOLE!

#### No. 15 DRILLS



Two setups — two operations at once on this sturdy 2-spindle bench model. Available in up to 4 spindles.



No. 15-M Drill An easy-to-handle heavy-duty manufacturing drill available in 1, 2, or 3 or 4 spindle units. Ample space spindle units. A for work pieces.

W HERE you have a lot of drilling up to 1/2" to be done in a hurry - and done accurately — your lowest cost way is with No. 15 Drills! Their simple design means simple operation and setup adjustment. WORK'EM DAY AND NIGHT — they're built sturdily and rigidly for years of punishment.

WRITE FOR BULLETIN 2963-D — see the many models ready to cut costs in YOUR production drilling.



You can also have the No. 15 in floor models like the above showing the wide range to fit YOUR OPERATIONS.

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Buffalo, New York Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

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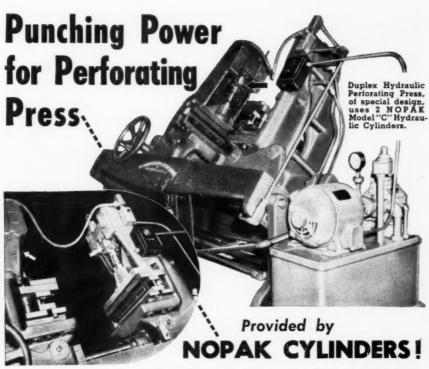


polishing...tumbling...pressure blasting...anti-slip



all standard grain sizes or run-of-mill sizes. Tradenamed BOROLON, BOROBLAST, BOROGRIT, and SANS-SLIP and produced under complete Simonds control . . . starting in the electric furnaces of Simonds Canada Abrasive, Ltd. and continuing throughout each process in our Philadelphia plant. Let's send you inspection samples and prices. When writing specify grain size required and use of abrasive.

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NOPAK Model "C"

Cylinder, either Air or Hydraulic, is designed for flat base mounting and vertical pushing power, either up-or-downstroke.

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GALLAND-HENNING MFG. CO.

2754 SOUTH 31st STREET MILWAUKEE 7, WISCONSIN

This unique press was specially designed and built by Verdin, Kappes & Verdin, Cincinnati, O., for high-speed, precision perforating of matching elbow blanks.

Two 3" Model "C" NOPAK Hydraulic Cylinders, controlled by one foot valve, supply ample power to perforate sheet steel, up to 24 gauge Maximum speed, 100-1" strokes per minute • Maximum capacity, eleven 9/64" holes • Operating pressure, 400 P.S.I.

This press has reduced spoilage substantially, has resulted in greater accuracy, has increased operating safety by eliminating the flywheel. Chances are that your standard or special machines can be designed for or converted to air or hydraulic operation by employing NOPAK Valves and Cylinders.

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Representatives in Principal Cities DESIGNED for AIR and HYDRAULIC SERVICE



#### There's a MILFORD DUPLEX HACK SAW BLADE for every hand-cutting

THE ONLY HAND HACK SAW BLADES WITH EASY STARTING TEETH

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- STARTS CUT AT ANY ANGLE
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No matter what you need to cut...or how...or where ... you'll find that MILFORD'S know-how ... accumulated in over 70 successful years of exclusive saw manufacturing experience...has produced the right blade for the job . . .

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Saw Specialists Exclusively for over 70 Years NEW HAVEN 5, CONNECTICUT, U.S.A.

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#### ...WITH OPEN OR CLOSED CENTER

32 years' engineering know-how • Completely equipped plant • Satisfaction assured • Complete range of standard types • Extra factors of strength and durability • Accurate, dependable service.

For your complete air and hydraulic chucking systems, Logan offers an extensive line of rotating cylinders, control valves, accessories, hydraulic power units and Collet Grip tube fittings.



LOGANSPORT MACHINE CO., INC.

1949

Logansport, Inc

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Our engineers will solve your chucking problems with Logan special chucks, mandrels and collet chucks. No obligation.

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Write for catalog No. 70, Section 1, on Logan air and by-draulic-operated chucks; catalogs No. 90 and 91 on air valves and cylinders.



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- . FASTER SPEEDS
- . HIGH ACCURACY

Illustration shows the IDEAL Male type Live Center. Female and Pipe type Centers also available.

Alsc Heavy Duty Live Center — built to carry heavy loads. Accurate to .0005.

Lathe and man-hour output both go up, quality of work is consistently improved with IDEAL Live Centers. Users report savings up to 50%.

IDEAL Live Centers do away with burned centers and scored work. They can't grab and cause gouging. You can take deeper cuts, can step up lathe turning speeds safely.

IDEAL Live Centers safeguard accuracy. Unique bearing arrangement, short overhang and precision construction let you work to closer tolerances, give you every live center advantage. Because they are a "sure shot" for lagging production and high costs, IDEAL Live Centers are a 2-to-1 favorite over all others. Get the facts today.

Easy to install. Efficiently removes abrasive dust, metal particles, etc. Two inlets, 500 cfm. capacity. Recirculates warm air - saves heat,



DEMAGNETIZERS



Simplify demagnetizing of work from magnetic chucks, also tools, drills, etc. Increase service life of tools. Two types, three models one for every use.



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Instantly marks anything made of iron, steel or their alloys. Burns smooth, permanent mark. Eliminates expense of name plates and tags. Pays for itself a hundred times. Three models — for every type work.



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The really amazing variety of models-catalog or "made-to-order" runs the full range of any requirement. Pipe sizes from  $\frac{3}{8}$ " to  $1\frac{1}{2}$ ".

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Specialties Co., Inc.

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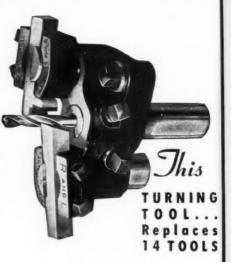
# R AND L TURRET BACK REST HOLDER

For use on R and L Turning Tools. Simple design allows for convenient interchanging of the R and L carbide surfaced or Roller Backrest (above) and the R and L Burnishing Backrest shown below. Built in sizes to fit all R and L Turning Tools.

R and L Tools Changed in Ten Seconds for Right or Left Hand Turning.

Manufacturers of Precision Tools for Screw Machines.

Also Turning Tools . . . Roller Backrests . . . Carbide Backrests . . . Top and Die Holders . . . Universal Tool Posts.



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P-327 — This POPE Sealed Motorized Spindle is recommended for all makes of its 16° x 16° surface grinders. It has sealed in the production, SK super-precision, double roller insides and greater finer insides and greater production.



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P-1—This POPE Beltdriven, Cartridge Type Surface Grinder Spindle with sealed-in lubrication fits standard grinders. It operdes at speeds up to 6000 RPM. It gives long, dependable service.



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9-2632—This POPE Direct
Motorized Cartridge 3450
Spindle with I HP, 3450
Spindle with I HP, 3450
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Spindle with mounts
is equipped wivision to 35
bracket with provision to 36
of precise endwise adjustment.



P-274—This POPE Double-Ended Tool and Cutter Grinder Spindle with sealed lubrication employs twin belt pulley center drive at speeds up to 6000 RPM. Fits standard grinders.



P-3521 — This POPE Internal Grinding Spindle is
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tension archangeable extension archangeable expage of service- The
Jesties Andrew on page 3
of Data Sheet No. 7 will fit

For complete specifications and estimates on any or all of these Spindles get in touch with

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#### POPE MACHINERY CORPORATION

ESTABLISHED 1920

261 RIVER STREET . HAVERHILL, MASSACHUSETTS BUILDERS OF PRECISION SPINDLES

## WOODWORTH

one of Jigs





MINNIE JIG



EQUIPPED WITH
FAMOUS WOODWORTH
"LIFE TIME" LOCK
—ALL SIZES
CARRIED IN STOCK

MINNIE JIG—for small work in 2 sizes:  $1' \times 1''$  and  $1'' \times 2''$  working area.

STYLE 3—up-clamp type for controlled depth of machining; sizes from 4" x 6" to 9" x 12".

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# GRIND TOOLS TO EXACT ANGLE .. FASTER



#### PROSSER CARBIDE GRINDERS

YOU GET the grinding angle you want instantly with the famous indexing feature of these Prosser high-speed grinders. The quick-acting tables need never be raised or lowered—and once set, they stay put.

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Before you get a grinder for rough work or fine finishing, wet or dry...get the facts on the Prosser. For details on bench and floor models, on chip-breaker, drill-grinding and other attachments...write for literature.

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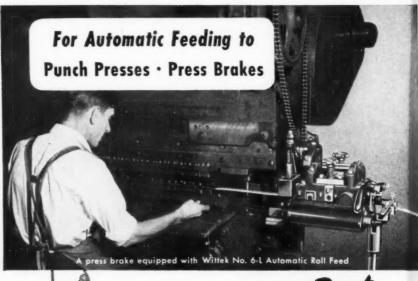
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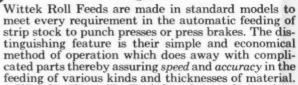
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1845

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Wittek Adjustable Reel Stands are designed as companion units to Wittek Automatic Roll Feeds and are available in seven different models to handle ALL types of coiled strip stock and wire being fed to punch presses or similar production machinery.

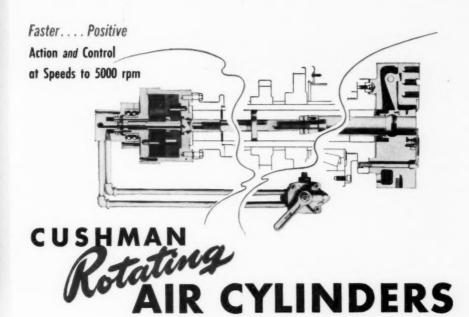
Special units of Wittek Automatic Roll Feeds and Adjustable Reel Stands are engineered to meet unusual requirements.

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WITTEK Manufacturing Co.

4321 W. 24th Place Chicago 23, III.





The high r.p.m. of air cylinders for control of chucks, mandrels and other air operated devices mounted on spindles, posed a problem that Cushman engineers have solved . . . and we now present the new Cushman High Speed Air Cylinders for use with Cushman Power Chucks . . . and with other makes as well.

Precision aluminum alloy construction lowers weight to a minimum . . . gives low flywheel effect . . . long service.

Balanced air pressure on both sides of air seal minimizes leakage
... means faster action, more positive control, time saving on
short run operations.

After assembly the entire cylinder is statically balanced for smooth operation.

For advanced machine tool applications in sizes from 31/4" to 12". Specify Cushman Power Chucking Equipment . . . for new or present machines.

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# ON SMALL DIAMETER PRECISION PARTS WILL MACHINE THEM Faster: More Accurately



If your production problems depend on the speed with which small parts are machined, an ELGIN may be your answer. The line of ELGIN High Speed Precision Bench Tools is designed to pay you dividends in better machining results, faster production and greater versatility. Write for specifications, prices.

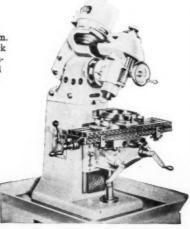
#### Elgin Knee Hole Type Hand Screw Machine

Variable speed range, 120 to 3800 rpm. 9" swing. 1" collet capacity. Collet rack inside of motor compartment door. Independent coolant system (5 gal.) mounted in rear, outside—cleaner, more accessible.

#### Elgin Vertical Bench Drilling Machine

Preloaded ball bearing spindle. 9/16'' collet capacity. Five speeds ranging from 400 to 4000 rpm. Vertical travel of spindle, 134''. Table 416'''x18''. 90° swivel each side of center line.

### ELGIN TOOL WORKS





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949

ALSO M'F'RS OF HITCH FEEDS • ROL-DIE-FEEDS
AND AUTOMATIC STOCK REELS
Catalog & Prices on Request

H. E. DICKERMAN
SPRINGFIELD MASSACHUSETTS



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The castings displayed on this page are just a part of our Stock Line. You save time and money when you use Chicago Castings.





Make our factory your headquarters for your casting requirements.



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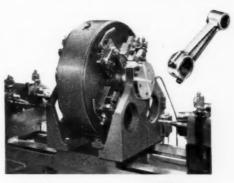
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2512 West Monroe Street, Chicago 12, Illinois

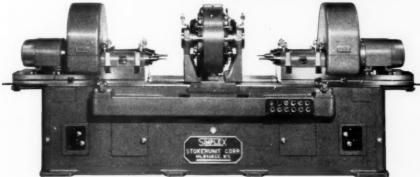


## Small high speed gas engines run at speeds unbelievable a few years ago yet with mechanical failures rare due to the increasingly high standard of workmanship on the running parts, but costs must be reduced to reach the volume market. SIMPLEX Precision Boring Machines with SIMPLEX engineered

tooling are used for this purpose by many leading manufacturers.

## SIMPLEX





This SIMPLEX 2U 2-way Precision Boring Machine with double-faced automatic indexing trunnion fixture is taoled for semi-finish and finish boring small die cast aluminum connecting rads with bronze inserts. Boring tolerances are plus .0003, minus .0000. Interchangeable fixtures are provided so that several different size rods can be run on one machine. This principle is applicable to many size rods where maximum production and accuracy at low unit cost are required.

### Precision Boring Machines

STOKERUNIT CORPORATION

**SIMPLEX Machine Tools Division** 

4530 West Mitchell Street, Milwaukee 14, Wisconsin
Precision Boring Machines, Planer Type Milling Machines and Special Machine Tools

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WE MANUFACTURE A COMPLETE LINE OF RESISTANCE SPOT WELDERS

FOR ALL TYPES OF WELDING IN SIZES: 1/4 to 300 KVA.
WELDING TIPS, HOLDERS AND HORNS.

ASK FOR EISLER'S TIP AND WELDER CATALOG



WE INVITE CONTRACT SPOT OR BUTT WELDING IN SMALL OR LARGE QUANTITIES



#### WE MAKE ALL TYPES OF TRANSFORMERS

SIZES FROM 1/4 TO 300 KVA

Furnace, Distribution, Lighting, Power, Auto, Phase Changing, Air, Oil or Water Cooled, Reactors and Special Transformers of all types.



Oil Cooled Type

Arc Welders 100 TO 400 AMPS. Butt Welders FOOT AIR MOTOR OPERATED Spot Welders PRESS Spot Welders FOOT, AIR OR MOTOR OPERATED

CHAS. EISLER

EISLER ENGINEERING COMPANY, INC.

762 South 13th Street (near Avon Avenue) NEWARK 3, NEW JERSEY, U. S. A. PRUTTON

TAPPING

MACHINES
IN



These GAS CYLINDER CAPS were tapped at a rate of 300-350 per hour on a No. 30 Tapmaster. Tap is a 3½"-x 11 pitch of the solid adjustable type. Built for heavy duty

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DESCRIPTIVE BULLETIN

D. H. PRUTTON MACHINE & TOOL CO.

5295 W. 130th St.

CLEVELAND 11. OHIO



1321 ELSTON AVENUE

CHICAGO 22, ILLINOIS

Other C/R maintenance products are: round, flat and twist belting; belt pins and belt lacings; gears, pinions and gear blanks; aprons and hand leathers; hydraulic packings.







#### **Dumore Handgrinders** are built to stay on the job ... do it right . . . at lower cost

#### These Dumore Advantages Save Money in Your Shop

- Long life Powerful, vibration-free Dumore motor runs on selected-quality ball-bearings, lubricated for life.
- Wide work range—Any shop has hundreds of different jobs for these tools: grinding, burring, finishing, polishing, spark-testing, etc. etc. The range of power, speed, and chuck capacity of these three Dumore Handgrinders give you a tool that's ideal for any job you have.
- Unique Adaptability The sturdy dependability of these tools adapts them for many special automatic set-ups. A typical example is shown below. The savings possible with such set-ups are truly amazing.

#### -that's why any production, maintenance, or toolroom job in your shop gets a break when it's done with a Dumore

Dumore Handgrinders chalk up month after month of full production schedules with little or no attention. Motors are built for long, trouble-free service. Ball-bearings are selected, with life-lubrication sealed in. That dependability drops cost to a new low!

#### Versatile for Special Set-ups

The off-hand jobs that call for Dumores are beyond number. But there are other cost-cutting possibilities, too. Many plants use Dumore Handgrinders, singly or in batteries, as precision workheads in low-cost automatic set-ups of their own design - for economical drilling, grinding, and light milling machines. Don't overlook this idea when you use Dumores to cut costs!

Prices slightly higher West of Rockies.



gs

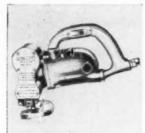
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Tear	out	this	coup	on	and		today!
Please Bulletin	end and	me F	REE	Du 2-2	more 65.	Hand	grinder
Company_		T de su		Po	sition_		
Company City							
	-		(	)	State_		G-21

## Tools for Odd Jobs Maintenance, Production

These three Stanley Electric Tools make odd jobs more profitable, and cut corners on maintenance and production work.

See your industrial distributor or write for literature.







No. 214 Unishear — Cuts 14 gauge and lighter cold rolled steel. Follows a line, either straight or curved. Easier to use than snips...and much faster.

No. 24 Electric Drill - 1/4 "capacity-for drilling in metal, wood and plastics. Powerful, small in size, for use in hard-to-get-at places . . . in awkward positions.

No. 266 Bench Grinder

14 H.P., 6" wheels.
Full ball bearing sealed against dirt. Adjustable tool rests. Extended frame gives large working area around wheels.

Stanley Electric Tools, 512 Myrtle St. New Britain, Conn.

THE GREATEST NAME IN TOOLS



Reg. U.S. Pol. Off.

HARDWARE · HAND TOOLS · ELECTRIC TOOLS





#### of TRIMMING FORMED PARTS

and performing a host of other metal cutting jobs!

The negligible down-drag and the ability of Tannewitz High Speed Band Saws to cut sheet metal from 90° to near 0 or 135° at tremendous speed make these machines idea for trimming. Cuts can be made with perfect safety without using a rest of any kind.

Friction sawing with Tannewitz High Speed Band Saws also results in perfectly amazing time savings in the cutting of flat sheets, soft or hardened steels, armor plate, plastics, glass and many other materials. Whatever your cutting problem, chances are it can be done better and faster with Tannewitz Band Saws.



Write for Your

HIGH SPEED BAND SAWS

THE TANNEWITZ WORKS GRAND RAPIDS

Showing drill in No. 3 turret position backing out as front and rear slide carbide tool form and face the o. d. and end of the piece. High speed camera has stopped chuck re volving at 1050 rpm. Note chips suspended



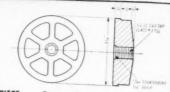
Convertible in 30 minutes-either as a bar machine or a chucker-the new Dialmatic Cleveland doubles the utility range of single spindle automatic screw machine production.

Cleveland's Model AB 21/2" Dialmatic is fast and accurate-rigid and powerful-with feeds and speeds (24-1820 rpm) that get the most from carbides. Set-up time is short. Forward and return feeds for turret tools are electrically controlled-simply set by dials on the control panel. Double cross slides operate by standard adjustable cams. Set-ups and adjustments are made quickly and accurately.

Get the full story on the new Dialmatic Cleveland. Write for bulletins. And if you are now producing duplicate parts up to 21/2" diam. from bar stock, or chucking work up to 6" diam. or larger (depending on o.d. of end to be gripped), send us your part prints and let us show you how profitably the new Dialmatic Cleveland will do it!

Remember.

Cleveland's Cut Costs



PIECE: Pump valve seat MATERIAL: Gun metal bronze sand casting First operation sequence

Spindle rpm	Turret positions				
1050	(1) Spot .375" (a .020" feed				
	(2) C'Bore .375" @ .020" feed				
	Rear slide face 1.343" (a .0045" feed				
	(3) Drill 1.000" (a .020" feed				
	Front slide form o.d. @ .0045" feed to 31/16".				
	(4) Open and skip-index				

Floor-to-floor time: 47 seconds Class 3 fit on thread

(5) Tap

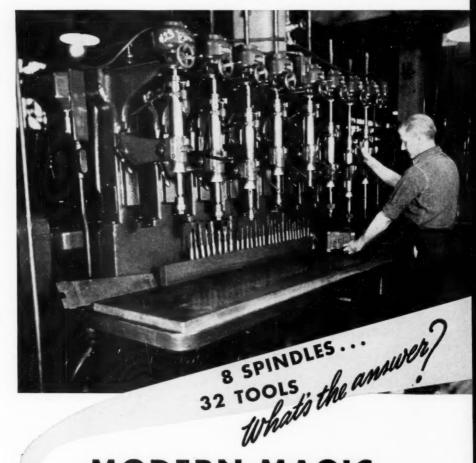
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#### THE CLEVELAND AUTOMATIC MACHINE COMPANY

4934 Beech Street Cincinnati 12, Ohio

SALES OFFICES: CHICAGO CLEVELAND . DETROIT HARTFORD . NEWARK

Manufacturers of a Complete Line of Single Spindle Automatic Screw Machines and High Pressure Hydraulic Die Casting Machines



## MODERN-MAGIC CHUCK AND COLLET EQUIPMENT

The above set-up is a typical example of what can be done with MODERN Magic Quick Change Chuck and Collet equipment. Here, four spindles of the machine, equipped with MODERN Magic Chucks, perform twenty-eight separate operations.

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The twenty-eight tools are easily and quickly changed without stopping or even slowing the machine. Bulletin M-101 gives complete details on MODERN Magic Quick Change Chuck and Collet equipment. Send for your copy today.

Only the ORIGINAL Modern-Magic Chuck and Collet Equipment carry the name "MODERN-MAGIC" and are manufactured by Modern Tool Works, Rochester, N.Y.

#### MODERN TOOL WORKS

CONSOLIDATED MACHINE TOOL CORPORATION



## New MERZ PICO Surface Comparator

eliminates human variables in surface control—takes exact readings electronically, right on the production line!

The new MERZ Pico Comparator checks surfaces the fastest, most accurate way known—electronically, against a Master. Eliminates human element entirely—gives exact, automatic meter readings on parts of all types in about 5 seconds. Makes production line surface control simple as routine dimensional gaging!

Unit is furnished complete with meter, exploring head and adapter. It is self-contained in a sturdy aluminum case, with carrying handle and storage drawer. Weighs only about 15 lbs. Can be operated from any standard 110volt, 60-cycle line. Special heads and adapters available for the most intricate jobs.

It will pay you to investigate the many ways MERZ Pico Comparators can raise the standards of your surface control—cut your checking costs. First cost is remarkably low; savings continuous. Write for a demonstration in your own plant.

MERZ ENGINEERING COMPANY, INDIANAPOLIS, IND.

New-Matic Measuring Machines—New-Tronic Comparators and Sorting Machines—Standard A. G. D. and Special Gages—Tools—Special Machinery—Experimental Projects.



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NEW MODEL

HIGH SPEED

## POWE MER SAWS

\$25015

All steel welded base and table top Belt drive Rigid frame Gravity feed Length gauge Expanding clutch Swivel Vise

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Stops automatically on completion of cut. ● Automatic relief of saw blade on non-cutting stroke. ● 6" x 6" capacity using 10" x 14" blades. ● 12" x 3" clutch pulley. ● Pulley speed 120 r. p. m. ● Coolant pump inside of base. ● Swivel vise permits cutting at various angles. ● Sliding bearing is dovetailed to fit arm and is adjustable in all directions.

Send for complete catalog giving prices and specifications on these quality, low-cost L-W Products



L-W CHUCK COMPANY 23 SO. ST. CLAIR ST.

Here's how

## NELCO FACE MILLS CUT TIME AND REDUCE COSTS FOR NEW BRITAIN MACHINE CO.

Milling the Forming Slide Cam blanks for New Britain-Gridley Model 60 sixspindle automatic Bar Machines is done six at a time with the No. 8106F Nelco Face Mill with carbide tipped blades.

The time and cost analysis chart shows the comparative savings effected by Nelco <u>carbide</u> tipped cutters over the tools formerly used. This is only one of many New Britain Parts which are milled efficiently with Nelco Tools.

OPERATION 110 mill and	CARBIDE	HIGH SPEED	
NO OF P'C'S PER GRIND	400	100	
COST TO GRIND	\$7.50	\$3.75	
NO. OF REGRINDS	8	10	
COST OF TIPS	\$8.00	\$16 20	
COST TO RETIP & SRIND	\$16.00	\$ 6.00	
COST OF CUTTER PER PIECE	\$ .024	\$.054	
FLOOR TO FLOOR TIME	15	35-	
TOTAL COST TO MILL ONE P'C.	\$ .144	8.394	

Nelco Face Mill No. 8106F . . . S F E C | F | C A T | O N S MATERIAL – S.A.E. 1045 GAS CUT SPEED – 500 R.P.M. FEED – 15" P.M.

WRITE for descriptive literature and name of your Nelco Distributor.

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Standard shanks with Morse tapers carried in stock . . .

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for every industrial purpose

1/3 hp to 300 hp 10 to 2300 rpm

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, 1949

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Send me free folder describing the Milmaster "that pays for itself in  $\alpha$  few jobs."

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# SUNNEN HONING can Do

#### -and With Equal or Greater Accuracy?

The speed and precision of Sunnen Honing Machines make them real time and money savers in your tool room. For holes in dies, jigs and fixtures . . . for fitting dowel pins and ejector pins . . . Sunnen Honing is the quick and easy way — the ideal way — to smooth finish and close tolerance.

ADDS EXTRA LIFE TO PARTS, TOO, because holes are geometrically true—straight and round—free from bell-mouth and taper. Tools and dies stay on the job longer; repairs are reduced.

SUNNEN TOOL ROOM MANDREL SETS provide overlapping coverage of complete honing units, ready for instant use. No storage problems—no lost motion or time in selecting proper size.

For FAST, EASY, LOW COST INTERNAL SIZING, use Sunnen Honing for best results. Free Bulletin MB-10 describes operation, gives full specifications. Write for it today.

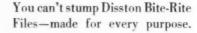
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St. Louis 17, Mo. . Canadian Factory: Chatham, Ontario



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Just pick a file-killing job. Then go to work with a Disston Double-Cut Bite-Rite File—the file with the staggered teeth that add to smoothness, speed and file endurance. Your work improves . . . your output jumps . . . your costs shrink. And that's typical of all Disston Bite-Rite Files.

For other metal-cutting tools of extra quality specify DISSTON SUPERFINE SWISS PATTERN FILES . . . DISSTON HACK SAW BLADES . . . CIRCULAR SAWS . . . CARBOLOY FITTED CIRCULAR SAWS . . . METAL CUTTING BAND SAWS ON SAFETY REELS.

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WD-10 Wet or Dry 10" Carbide Tool Grinder



Hammond Carbide Tool Grinders will soon pay for themselves thru greater wheel economy, longer tool life and FASTER grinding. They relieve toolroom bottlenecks and step up production. Write for Carbide Grinder Cataloa 220.

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RECENT improvements at Ohio State University, included the modernization of many South Bend Lathes with "selective-speed" LIMA Gearshift Drives. A few of these machines are shown in the photo below. LIMA Gearshift Drives were se-

lected by Ohio State because of LIMA'S "production-line" tested reputation for flexibility, ruggedness and stamina. If you have a drive problem, it will pay you to consult a LIMA engineer—there is one near you . . . write, wire or call for his address today.

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Representation in principal cities

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The Magna-Sine, used with standard gauge blocks, is the only positive shop method of making fast angular set-ups. Plus this angular accuracy, the work piece is held securely, without distortion, by magnetic attraction on a permanent-magnet chuck.

The Magna-Sine—except magnetic parts—is made of hardened, seasoned steel and all gauging surfaces are ground and lapped flat and square for positive accuracy from every set-up.

Set-ups are made by inserting standard

gauge blocks between the plates of the Magna-Sine. The proper blocks are indicated for all angles in the Table of Constants furnished with every unit. No dials to go out of adjustment; no scales to misread . . . no parts to move or go out of adjustment after the set-up is completed.

Write for descriptive bulletin which gives full details and prices on these versatile units. Thousands are in daily use.



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Manufacturers of the MAGNA-SINE and Other Precision Tools

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## Torit Dust Collectors, by capturing abrasive dusts, prevent damage to precision equipment and finished parts.

TORIT Dust Collectors are self-contained units that trap dust from a wide variety of machines, and recirculate the cleaned air. Compactly designed, they occupy little space and require a minimum of piping.



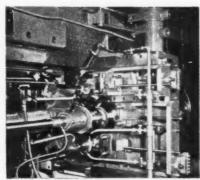
TORIT Dust Collectors range in size from 1/3 HP to 5HP. They fit all standard polishing, cut-off and grinding machines, and are easily adapted to special equipment or unusual production set-ups.

TORIT Dust Collectors are moderately priced and exceptionally economical to operate. Standard models are available for immediate delivery. For details and the latest TORIT catalog write:

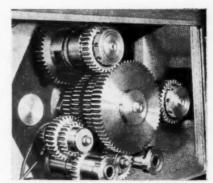
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Full Swing for Main and Auxiliary End Slide Standard and Special Tool Mountings



Cone "Full-Choice" Open End Attachment Drive

#### IS HALF A LOAF BETTER THAN ONE?

Machine capacity can usually be measured by tooling accommodation. The facility available to handle the job will determine a machine's dollar value.

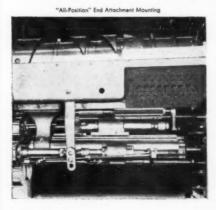
Lack of a "full choice" accommodation of tooling positions for endworking tools and attachments can be a costly handicap to a multiple spindle automatic. The inability to swing to full collet capacity die heads, hollow mills, trepans, and internal necking tools, can limit a machine's usefulness on many

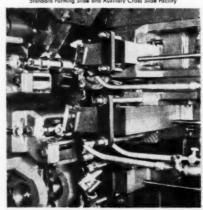
jobs from zero up. Like half a loaf — better than none, but much less than one.

The "full choice" tooling accommodation of Conomatic cross slides, main end slides, auxiliary end slides and endworking attachment drive positions, are worth checking.

Write to Cone for Buyer's Chart which lists overall requirements of Multiple Spindle Automatics.

Standard Forming Slide and Auxiliary Cross Slide Facility







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A comparison with ALL Automatics will lead you to

**Conomatic** 

CONE AUTOMATIC
MACHINE COMPANY, INC.
WINDSOR, VT., U.S.A.

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16

25-125 erratic threaded holes per tap

22,000 clean class 3 threaded holes per tap



PART: 18-8 stainless steel hex nut with punched hole

PROBLEM: Tapping with a 10-24 tap, a leading nut manufacturer experienced difficulty holding size and was troubled with excessive tap breakage. Then They Called in the HY-PRO Sales Engineer

HY-PRO SOLUTION: His recommendation was a standard Hy-Pro 10-24 machine screw tap with one of the exclusive Hy-Pro surface treatments for wear and lubrication. Speed and cutting oil were adopted from extensive tables in Hy-Pro catalog. Production with Hy-Pro taps now averages 22,000 burr-free Class 3 threaded holes at 62 nuts per minute.

Above is a typical example of how the Hy-Pro Sales Engineer can help increase threaded-hole production. His expert engineering counsel backed by the most up-to-date tap production methods combine to solve tapping problems rapidly and profitably.



Let Hy-Pro solve your tapping problem call a Hy-Pro Sales Engineer today.



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IDIARY OF CONTINENTAL SCREW COMPANY



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Two intersecting punched hales are reamed to size and location within .0005". The stainless steel work piece is held in a table fixture and fed into the cutter by transverse lever feed. 1/4" of stock is removed on the diam Production is 700 pieces per nine-hour shift on e Nichols Production Model Miller.

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Because the Nichols Miller is endowed with an unusual versatility, by virtue of its unique rise-and-fall spindle, it is often a "jack of all trades" in a shop. In addition to conventional milling, it is used for such varied jobs as profiling, drilling, reaming, turning, boring, facing, key seating, broaching and vertical milling. Yet this same machine is designed so functionally and built so accurately that it is used for high production of precision parts with tolerances to "tenths."

Nichols Millers are made in the following models, all having the same basic features but modified especially for particular requirements: The Standard Model for general shop use; the Tool Room Model with special table and extra large micrometer dials for finer measuring control; the Semi-Automatic Model equipped with automatic pneumatic table feed; the Production Model with lever longitudinal and transverse feeds; and three Double Spindle Models for use where the simultaneous action of two cutters is practical.

MANUFACTURED BY W. H. NICHOLS COMPANY WALTHAM, MASSACHUSETTS

#### CONDENSED SPECIFICATIONS

63/4" x 21" or 30" **Table Working Surface** 10" or 19" Longitudinal Travel (screw or lever) Transverse Travel (screw or lever) Vertical Travel - Knee 131/2" Rise and Fall of Spindle 41/2" Selective Speed Ranges up to 5000 R.P.M. 1250 lbs. Weight



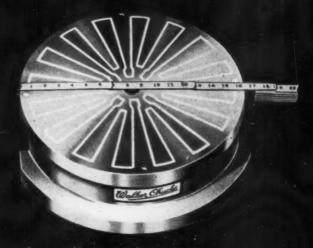




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## Walker Does It Again -



16" Rotary Permanent Chuck

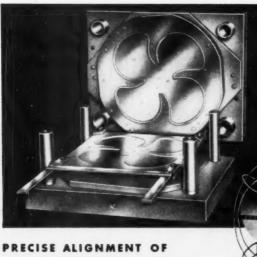
In the building of a magnetic chuck, the primary objective is to provide uniform lines of force over the entire chuck surface. This problem becomes increasingly difficult as the area of the chuck is increased. Walker engineers solved it by employing the exact proportion of Alnico to the mass of iron necessary to polarize the entire surface, and at the same time have magnets polarized with equal amounts of force. This equalization is the fundamental principle involved in the Walker patented Permanent Chuck circuit. Now, Walker is proud to be able to announce sizes unlimited.

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Original Designers and Builders of Magnetic Chucks



Courtesy of Westinghouse Electric Corp.

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Here is an instance where extreme accuracy in a Producto die set pays off in cost savings . . . as follows.

- 1. More than 2,800 four blade (12 in. dia.) ALUMINUM electric fan blanks produced per shift.
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SENTRY MODEL YP

The Sentry Company

FOXBORO, MASS., U.S.A.



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If you have the problem of getting smoother, faster, more uniform production screw driving . . . then Millers Falls portable electric screw drivers will pay off for you in results and savings.

Their patented, super-sensitive "Adjustomatic" clutch is the reason. It gives velvet smooth, vibrationless operation even on assemblies usually considered too delicate for a power driver. So sensitive it delivers the *right* torque for screws from No. 10 down to No. 2. Lengthens the useful life of the tool. Increases assembly and production efficiency and speed, cuts costs.

Write for full information and the name of your nearest Millers Falls distributor. He can help you. Millers Falls Company, Greenfield, Mass.

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SUPER CARBIDE INSERTS



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LONGER TOOL LIFE

SHORTER
"Down Time"
FOR TOOL CHANGE

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A NEW SUPER FIXTURE for Easy, Accurate, Uniform

on carbide inserts

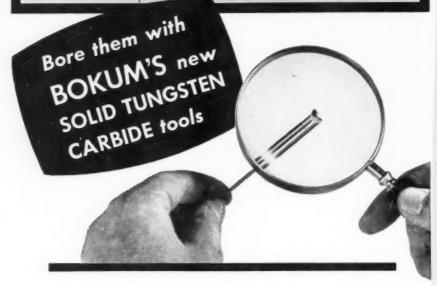


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New design for precision boring of small, long, concentric holes without taper



Here's a new development in tools that enables you to bore small diameter holes to extreme depth with precision. Here's a boring tool with great rigidity. Cutting heads and shanks are made of two different grades of carbide. Shank diameters range from ½"

to ½". Here is the last word in precision boring—rendering still more valuable the recognized features of Bokum Boring Tools which (1) retain clearance throughout life, (2) require resharpening only on face.

Send for Bulletin H-948



BOKUM TOOL CO.

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The high production capacity, modest first cost and the low maintenance on RACINE machines recommend them to your use. Available in all capacities from 6" x 6" to 20" x 20". Early deliveries on single purpose, automatic bar feed units and special machines for unusual jobs. Get the full RACINE story by writing today. Free No. 12 catalog. RACINE TOOL & MACHINE Co., 1754 State Street, Racine, Wisconsin.



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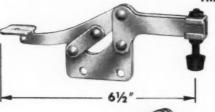
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#### Where jobs require

## NOLE CLAMPING



This side mount clamp is ideal to use where the toggle bar must be positioned at an angle. The clamp can be easily rotated to meet such requirements much better than one with tee base, which necessitates blocks or shims to achieve the desired angular mount. Three sizes are available.



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Model HS-200 4%" long, recommended pressure 200 lbs.

Model HS-400 61/2" long, recommended pressure 400 lbs.

Model HS-600 91/8" long, recommended pressure 600 lbs.

KNU-VISE PRODUCTS

LAPEER MANUFACTURING CO. 3056 DAVISON ROAD . LAPEER, MICHIGAN

## Enthusiastic Customers do our BEST advertising

In one of the world's largest electrical equipment plants, three of a battery of eight Grand Rapids No. 25 Hydraulic Feed Surface Grinders precision grinding lamination dies for motor stators.

\$



You will appreciate the micro-inch finish produced at production speeds on Grand Rapids Grinders. All Grand Rapids Hydraulic Feed Surface Grinders have these outstanding features:

- One-piece column and base casting for vibrationless rigidity
- 2. Precision ball-bearing spindle which is greased for life
- 3. Bijur one-shot lubrication system eliminating hand oiling
- 4. Patented vertical movement of wheel head for quick, accurate adjustments
- 5. Portable coolant tank for ease of coolant replacement
- Vane type hydraulic pump for fast longitudinal table travel

#### GRAND RAPIDS GRINDERS

to some you -

Your inquiry concerning your specific grinding needs will receive prompt attention. Grand Rapids Grinders include: Hydraulic Feed Surface Grinders, Universal Cutter and Tool Grinders, Hand Feed Surface Grinders, Drill Grinders, Tap Grinders, and Combination Top and Drill Grinders.



405 Straight, S. W., Grand Rapids 4, Mich.



## Now

#### PRODUCE SPECIAL TOOLS

SPIRAL OR STRAIGHT FLUTES

from other tools or from solid steel

in your shop

- FROM THIS

#### OTHER USES IN YOUR SHOP:

- GRIND RADIAL OR FORM RELIEF
- GRIND RADIAL AND FORM RELIEF AT ONCE
- GRIND OUT FLUTES
- GRIND FORM TOOLS WITH SPIRAL FORM RELIEF
- GRIND RELIEF ON O.D. AND FACE OF STEP TOOLS AT SAME TIME WITH .005" MAX. RADIUS IN CORNER

Also used as motor-driven headstock for grinding straight or tapered cylindrical work. When the need comes up for a special spiral-fluted cutting tool in your shop, you can make it quickly and accurately if you have the Detroit Reamer Circularity-Grinding Attachment. Tools can be produced complete with any number of flutes up to 24 and any length... they can be produced from other tools or from a solid piece of steel. This attachment is also valuable for grinding relief on all cutting tools, whether straight-fluted, spiral-fluted or straight or tapered.

The Circularity-Grinding Attachment fits on any standard cylindrical or cutter grinder and is easily set up for any job. All tools produced from the same set-up are identical and set-ups can be duplicated again and again by merely resetting the scales provided on the attachment.

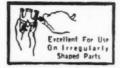
Think of the savings in time and money when you can produce your own "specials" in any quantity . . . easily, quickly, inexpensively.

Send for Bulletin



#### DETROIT REAMER & TOOL CO.

Mfrs. of Special High Speed Cutting Tools
2830 East 7 Mile Rd. Detroit 12, Michigan











#### Precision Control KEEPS YOUR WORK WELL IN because SMALL-SIZE Handpiece



3 quickly interchangeable handpiece types—pencil sizes and larger—some with flexible wrist-see arrow.

#### EVERY LIGHT GRINDING. FINISHING and DEBURRING JOB

Foredoms can be profitable additions to ALL THREE DEPARTMENTS — PRODUCTION, MAINTENANCE and TOOL. There is no limit to a Foredom's amazing versatility. Every shop needs one or more, because FINGER-TIP CON-TROL assures precision results. The SMALL-SIZE handpiece means your work is always well in view, hence - superior workmanship.

#### QUALITY-TESTED FOR MORE THAN A QUARTER CENTURY

The FOREDOM line includes "hang-up" models as illustrated and easily portable bench models. Foot rheostat is standard with most of them. Motor driven models start at \$15.95. Also available are flexible shaft tools complete with handpieces for attachment to your own motor, drill press or electric drill at prices as low as \$5.95 ALL PRECISION BUILT.

Our catalog N-1917 gives you valuable information as to how you can profitably employ FORE-DOMS. It will pay you to send for it.

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FLEXIBLE SHAFT MACHINES	
SOLVE MANY PRODUCTION AND MAINTENANCE PROBLEMS	City & ZoneState

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27 Park Place	e, New York us your cate different uses	Dept. N-1917 7, N. Y. alog No. 1917, s of FOREDOM'S
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City & Zone		State

## The First MAJOR Holder IMPROVEMENT In 25 Years GLOBE

## Boring Bar Holder Set

Cut set-up time to a minimum \* Increase output \* Reduce costs



#### PATENTED HOLDER

Exclusive dual clamping arrangement permits independent adjustment of bar or alignment of holder—either may be made without disturbing the other. Holder will accomodate all fractional sizes of Bars (within its minimum and maximum capacities) without use of sleeves or bushings.

#### COMPLETE SETS (Holder and Three Bars)

Set No.	Diameter Bar Inches	Tool Bit Inches Square	For Lathe Swing Approx.	Price Complete
O-AA	*3/8. 1/2. 3/4	*. Ts. 1/4	8" to 12"	\$ 16.40
I-A	1/2. 1/4. 11/8	14. 14. 1/4	12" to 18"	26.35
2-A	A. H. IA	A. A. %	16" to 18"	35.15
3-A	3/4, 1/8, 1/2	1/4. %. 1/2	20" to 22"	61,55
4-A	18. 1-4. 1%	A. %. %	24" to 36"	87.95
6-A	11/2. 17/0. 21/2	1/2. 3/4. 3/4	24" to 36"	193.50

\* 3/4" diameter bar included in set is solid tool steel.

#### INDIVIDUAL BARS (Calibrated)

Bar. No.	Dia.	Longth	Tool Bit	Price	Bar No.	Dia.	Length	Tool Bit	Price
162A	3/8"	7"	1/8	\$3.50	127A	1"	14"	4	\$6.30
122A	1/2"	8"	· A	3.50	128A	11/8"	16"	36	8.75
123A	18"	9"	*	3.50	129A	14"	18"	3/8	12.30
124A	%"	10"	*	3.50	130A	11/2"	23"	1/2	16.30
125A	34"	11"	1/4	4.35	176A	17/8"	30"	%	36.35
126A	19"	13"	4	6.30	155A	21/2"	36"	3/4	72.70

#### CALIBRATED CHATTER-PROOF BORING BARS

- ★ Graduated in quarter inch calibrations to speed production.
- ★ Made from special tough non-chattering steel.
- ★ Tool bit hole broached in each end—one at 90°, other at 45°. (17% and 21/2" Bars have one hole at 90° and other at 30°.)

When ordering give make and swing of lathe.

#### IMMEDIATE DELIVERY

Write for information on GLOBE Grinders—Buffers—Millers—Hand Screw Machines—Turrets—Cross Slides—Etc.

DISTRIBUTED BY BETTER
DEALERS EVERYWHERE

HIGH SPEED CUTTER BITS-PRICE EACH

#### GLOBE PRODUCTS MANUFACTURING CO.

3380 Robertson Blvd., Los Angeles 34, California, U. S. A.

## <u>Bridgebort</u>

## TURRET MILLING MACHINES

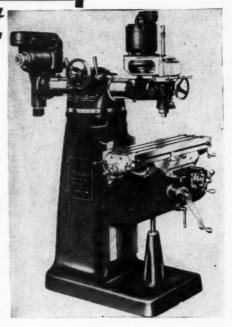
How is your production dated . . .

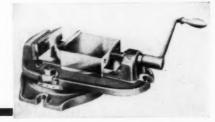
'49--'39--'29-or what?

Bridgeport Turret Milling Machines have proved that you can't handle today's work on yesterday's machines . . . and do it economically. Furthermore, experience has shown that "Bridgeports" are making other methods obsolete in terms of speed, cost, accuracy and convenience.

If you're really concerned over small parts production costs, why not outline your problem and let us give you an approximate estimate of what you can accomplish by handling your work on a modern "Bridgeport"?

Remember: milling, drilling, boring and shaping at all angles of the work without changing set up are handled on the "Bridgeport". Certainly the possibilities of savings with such a machine are worth investigating.





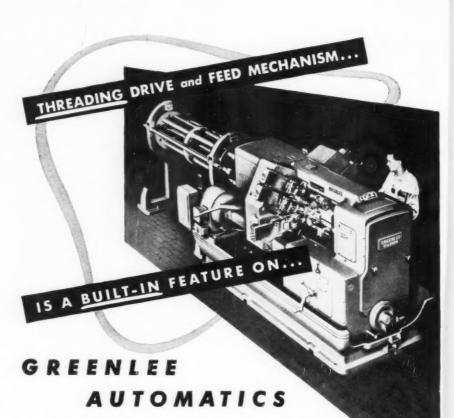
#### **Specifications**

Longitudinal Feed . . . 20" with standard 32" table. Cross Feed . . . 9". Vertical Feed of Knee . . . 16". Tables 26", 42" and 48" are available; also longitudinal power feed. Weight with Shaping Unit . . . 2,000 pounds.

#### BRIDGEPORT MILLING MACHINE VISE

This improved, high quality vise with coolant trough is a 'Bridgeport' development, attractively styled to conform with the design of the machine itself. A large diameter screw assures greater gripping power, making it unnecessary to hammer crank handle to attain rigid holding of work.

Bridgeport MACHINES, INC.



A threading drive and feed mechanism is standard
equipment on Greenlee Automatics. It is built into
the machine to handle threading attachments in the
3rd, 4th, 5th, and 6th positions. A duplex clutch
and shifting lever takes care of either right-hand or
left-hand threading and tapping tools.

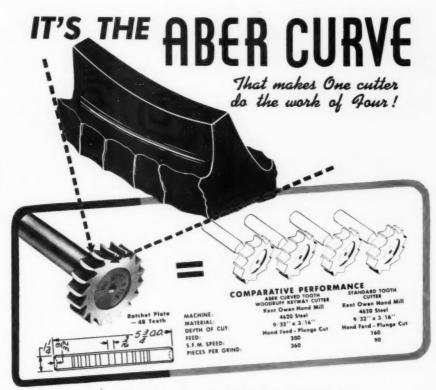
For ease and speed in set-ups and job-changes, Greenlee's universal tooling is the answer. Interchangeable
tool holders fit any cross slide cavity...can be
changed quickly...and insure precision and uniformity in the production of duplicate parts. These
outstanding GREENLEE features can greatly
improve the efficiency of your production.



WRITE FOR LITERATURE—There are many more money-saving, cost-cutting features of Greenlee Automatics. Let us send you additional literature.

GREENLEE BROS. & CO., 1835 MASON AVE., ROCKFORD, ILLINOIS

MULTIPLE SPINDLE DRILLING, EDRING, TAPPING MACHINES . AUTOMATIC SCREW MACHINES . AUTOMATIC TRANSFER PROCESSING MACHINES



Yes, in an actual test in a large pipe threading company's shop, ONE Aber Curved Tooth Woodruff Keyway cutter performed the work ordinarily requiring FOUR cutters of standard tooth design. This 400% increase in cutter performance is by no means unusual, for Aber's exclusive curved tooth design permits a smoother finish, absence of chatter, greatly increased cutter life, and cuts more freely with far less hand pressure from the operator. In addition, it proved to be a tremendous saver of "down" time, and reduced costs in the cutter grind room.





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When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

#### NEW MADISON Grinding Fixture gives you precision tool grinding at a **NEW** low price

Only \$75.00 for this ruggedly built, soundly designed grinding fixture that handles the many tool grinding jobs with speed and precision. Now even the smallest shop can own one . . . and large shops can have several and avoid any delay in tool sharpening. Although the low price has been made possible by eliminating the expensive adjustments

which are so rarely used, in actual practice the scope of this fixture is limited only by ability of the toolman to work out a setup.

The Madison fixture is graduated in all three planes and offers 180° automatic indexing for resharpening Madison cutters and which can be released for conventional handling of other types of tools.





Regrinding face mill.



Grinding trailing angle and relief on tool bit.



Regrinding face of end mill.



Resharpening spiral milling cutter.



Regrinding relief angle on Madison reaming cutter.



Grinding lead angle on Madison roughing cutter.

ARBORS FOR MADISON FIXTURE are available for Jacobs chuck, for milling cutters, and for single bit tools, as well as the complete range of arbors for Madison tools, at \$12 each. If needed special arbors will be designed and built by Madison. Quotations upon request.

WRITE FOR this NEW color bulletin which describes the Madison fixture in detail.





TADISON MANUFACTURING COMPANY
DEPT. BB MUSKEGON, MICHIGAN



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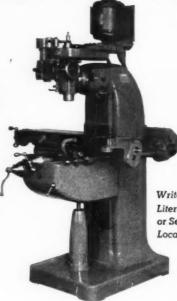
### FIRST IN LINE FOR 49!

IT'S

## INDEX

**AGAIN** 

The Milling Machine
That Means Savings
For You...



Write for Literature or See Your Local Dealer

During the past year the new Model 50 Index Milling Machine has proven its great scope of usefulness in a wide variety of production line and general tool room jobs. Operational analysis has also shown that Index leads in savings on production time and labor over any other machine of comparable size or cost.

In addition to the freedom from chatter and solid rigidity built into the machine, each control and working part operates with smooth, accurate precision to hold fine tolerances. The ease with which any necessary rate of spindle and table feed can be obtained and the rapid traverse for re-positioning puts the Index Milling Machine definitely on the production line.

A complete line of accessories is available including end measuring rods and indicators, right angle milling head, both hand and power operated precision rotary tables and indexing attachments.

## INDEX MACHINE Co.

545 N. MECHANIC STREET

JACKSON, MICHIGAN

## AMAZING! UNBELIEVABLE!

**NEW INVENTION** 

## the SHEARCUT THREAD-CUTTING BROACH

FORMS THREADS BY THE NEW SHEARCUTTING TECHNIQUE



Note the True Shearcutting Faces



Broaching threads in a blind hale. Note the continuous one piece curled chips being fed out of hale.



Broaching threads in through holes. Note the curled chips being removed in front of broach.

#### SAVE - SAVE - SAVE - SAVE

### REPLACE YOUR TAPS WITH THREAD-CUTTING BROACHES

by United States and Foreign Patents.

received, pending, or applied for.

Patent Warning
All Shearcutter Tools are protected

#### THREAD CUTTING BROACHES DELIVER THESE REMARKABLE ADVANTAGES:

· End tapping trouble.

9

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- Produce perfect threaded holes by a true Shearcutting Broaching action.
- · Are practically unbreakable.
- Ground from hardened high-speed solid blanks.
- Require only one-half the power required for tapping.
- · Work equally well in all materials.
- . Do not bind or seize in the hole.

- · Have an amazing long life.
- · May be resharpened many times.
- Tend to be self sharpening.
- . Do not tear the material being cut.
- · Feed the chips out of the hole.
- · Lower production costs.
- · Replace standard taps in most sizes.
- · Lower scrapped parts.
- · Lower Power requirements.
- · Lower tool cost per threaded hole.

SHEARCUT TOOL COMPANY
BOX 746 - RESEDA, CALIFORNIA

## For ECONOMICAL FASTENING CALL Chicago Rivet!

Riveting with Chicago
Automatic Rivet-Setters
is a fast, inexpensive
way to fasten metal to
metal, wood to wood,
leather to leather, fabric
to fabric, plastic to plastic,
or any combination of these.
Chicago Rivet engineers have
the experience of 26 years to
help you with your hard fastening problems.

## Free FASTENING CLINIC

Send us a drawing or unfastened sample or sub-assembly of your product. We will gladly analyze your fastening needs, recommend the type of rivet and Chicago Automatic Rivet-Setter to do the job best, and submit estimated production rates. No obligation.



Chicago Automatic Rivet-Setter

#### CHICAGO RIVET & MACHINE CO.

9610 W. Jackson Blvd., Bellwood, III. (Chicago Suburb)

Automatic Rivet-Setters • Tubular and Split Rivets in all Rivet Metals

# There's a PLACE for this PRESS in Your PLANT

## IF YOU WORK WITH METAL, THIS NEW KRW FORGING AND FORMING PRESS IS PRECISION-BUILT FOR LONG OR SHORT RUNS PRICES\* RANGE FROM ONLY \$1850 TO \$1910!

◆ Here's a brand new dual purpose Hydraulic Press that fills a long felt need by many plants. This new 75-ton press can be used on many forming and cold forging or pressing operations. It is easily shifted from one set-up to another; can be used with inexpensive dies to do a wide variety of work . . . relieving heavier equipment for other work. The press is GUARANTEED for ONE YEAR against defects in material or workmanship. Here are some of its features: adjustable bed, platen is precision ground. Equipped with 2-speed built-in hand pump for die try out and delicate pressing. Mechanite Cylinders precision machined

and honed to mirror finish. Guided ram to prevent ram swiveling. Get the facts about this latest KRW press development. There's a place in your plant where it can save you money.

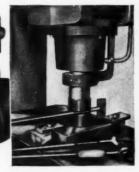


Illustration shows the press being used to cold form an automotive valve lifter.

#### BRIEF "SPECS"

Standard Model, Series 3700-F,

6" ID Cylinder, 7%" stroke.

Platen 30'x 18'x 2", adjustable in 4" steps.

Daylight 6" Min. to 18" Max. Frame Heavy welded steel.

11" stroke cylinder available in air return or double acting types.

Ram Travel Speed varies from 1' per 3.5 seconds to 1' per 2.6 seconds depending upon capacity of hydraulic equipment selected.

Delivery: Standard models one week.

\* Depending upon capacity and size of hydraulic equipment and motor required. F. O. B. Factory.

LITTLE SPACE Overall Dimensions: 80° high, 53° wide, 40° front to back. Top of

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platen to floor when in highest position 42°,

MAIL COUPON TODAY FOR ALL THE FACTS

**K·R·WILSON** 

215 MAIN ST. BUFFALO 3, N.Y.

K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

Please quote me prices and information on your new 75-ton Series 3700-F Press.

Name .....

*iddress* 

City and Zone. State









ASK FOR A COPY OF THIS BULLETIN

## CONTROLS to meet your needs

SENSITIVE PRESSURE CONTROL — An exclusive Hannifin development for straightening and forcing presses. A single lever (hand or foot operated) gives operator complete control of ram movement and pressure. Move the lever down slightly and the ram approaches work at "no pressure"... increase lever pressure, and ram pressure increases ... release lever, and ram returns automatically to starting position.

ELECTRIC PUSH BUTTON CONTROL — For high speed repetitive operations. Engineered to fit work requirements. Wide choice of optional features, including speed control. Automatic or semi-automatic cycling, if desired.

DIRECT MANUAL CONTROL — For general utility work. Upward and downward movement of ram controlled directly by operating lever. Adjustments optional for maximum pressure and travel.

#### HANNIFIN CORPORATION

1101 S. Kilbourn Ave.

AIR CYLINDERS - HYDRAULIC CYLINDERS - HYDRAULIC PRESSES
- HYDRAULIC RIVETERS - AIR CONTROL VALVES
Nationwide Sales and Service

### The **NEW ERICKSON** Speed Indexer

Designed to Speed Up Milling, Drilling, Punching and similar Machining Operations

CAN BE USED IN Horizontal or Vertical POSITIONS

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OIS PRESSES VALVES

### ONLY the Erickson AUTOMATIC Speed Indexer Gives You POSITIVE LOCKING at this LOW COST prices \$215 (less start at \$215)

Here, at last, is a sure-fire way to speed up those time-consuming indexing jobs, and bring production costs down another peg. The Erickson Speed Indexer is the answer! A recent development by Erickson Tools, it fills the long-standing need for an accurate, quick-acting, automatic, positive-locking mechanism with versatility that eliminates the need for many expensive work-holding devices.

The Speed Indexer may be mounted vertically or horizontally, may be operated by air or hydraulically, and may be made fully automatic by connection with table controls. Used for milling slots, keyways, flats, flutes, notches; for drilling, tapping—for practically any operation requiring regular spacing.

## BOOSTS TAPPING MACHINE OUTPUT 100%

Leading auto manufacturer" reports: "Vertically mounted Speed Indexer rotates 8 position fixture, each position folding oil pump housing for 4 hole tapping operation. Set-up is fully automatic. Result—2406 housings (4 holes) tapped every 8 hours—production up 100%—man hours cut in half." "Name withheld on request.

### Increase Production—Reduce Cost ON YOUR INDEXING JOBS TOO!

Get Full Details . . .

Learn how the Erickson Speed Indexer can mean higher preduction—lower cost on all your indexing jobs new. Write for full details or ask for an Erickson Engineer today!

#### ERICKSON TOOLS DIVISION

2300-D Hamilton Ave., Cleveland, Ohio

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\*Standard equipment at no extra cost in A blocks; small additional charge in B blocks.

\*Patent Applied For

#### A ROLL CALL OF WEBBER FIRSTS 1929-1949

FIRST: Low cost gage blocks that put precision within reach of smallest shops.

FIRST: Wear blocks added to standard sets at no extra cost. FIRST: Easy view tilt case for quick identification of blocks, FIRST: Carbide-tipped blocks with continuous unbroken gaging surface.

FIRST: Angle Blocks for the direct measurement of angles in degrees, minutes and seconds.

FIRST: TRUE SQUARE in U.S.A. with all four gaging surfaces at precisely 90° to adjacent sides.

FIRST: THERMO-GUARD insulates 2", 3" and 4" gage blocks from body heat.

Tool makers who work in split tenths and in dimensions above 1" have always been aware of the variables introduced by body heat and the necessity for allowing blocks to "cool off" after handling and before making an extremely critical inspection.

Tests have shown that heat from the hands causes a  $4^{\prime\prime}$  steel block to grow .00005 $^{\prime\prime}$  in 15 seconds.

To avoid that error, Webber has added THERMO-GUARDS to all 2", 3" and 4" steel and carbide-tipped blocks.

Thus delays and difficulties due to variables in temperature are avoided.

It is another of a formidable list of Webber firsts that has added speed and precision to gage block inspection. Write for details.

#### Webber Gage Company 12905 Triskett Road • Cleveland 11, Ohio

Largest Exclusive Manufacturer of Precision Gage Blocks

Webber MICRO-ACCURATE

GAGE BLOCKS and FIXTURES

Wahber Gage Company, makers of standard carbide gage blocks, angle blocks, true square, wear blocks, special sixe blocks, heavy duty blocks and fixtures.



NATCO HOLEWAY CYLINDER BLOCK PROCESSING MACHINE, by R. A. Schafer. Here is a completely detailed description of a modern transfer machine as used by one of the country's leading automobile manufacturers. Not only is the operation of the machine described, but the hydraulic system and the indexing, clamping mechanism as well. This article is well worth close study for the engineering excellence of the machine. Page 103.

ANALIZING FAILURE, by Jerome A. Raterman, lecture No. 17 in the NMTBA Sales Refresher Course. Failures to sell customers are disastrous in all lines of business endeavors. In the machine tool field, where sales costs are very high, failures are particularly disastrous and every effort must be made to analyze each and every failure as it occurs. Many causes are responsible for failures, some of

1949

LETTER FROM ENGLAND. Mr. Robert Hutcheson continues his excellent discussions on business conditions in Great Britain. It will be noted that in several paragraphs of his present letter the knowledge is conveyed that business conditions are pretty much the same in Great Britain as they are in the U. S. Page . . . . . 163

Page
WHAT'S NEW IN METALWORKING. Page
SHOP HINTS. Page
Turning a 35,000 lb. Screw. Page 271
A Profiling Fixture for Contour Turning. Page272
A Special Machine for Silver Alloy Brazing. Page275
Machining Zinc Alloy. Page276
Qualities of Cutting Oils. Page277
Lubricating Broaches. Page278
AVAILABLE LITERATURE. Page280
NEW BOOKS. Page284
NEW INDUSTRIAL FILMS. Page288
NEWS OF THE INDUSTRY. Page291
OBITUARIES. Page300
APPOINTMENTS AND PROMOTIONS. Page

THROUGH

PRODUCTS INDEX. Page ......310

INDEX TO ADVERTISERS. Page .....318

**MECHANICS** 

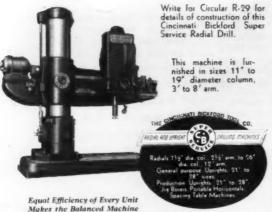
## Unusual Tool Capacity Unusual Spindle Support

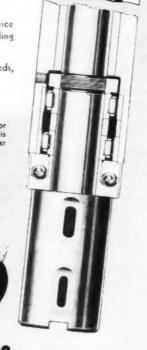
What is full spindle support? What does it accomplish? It's rigid support against thrust and radial load—at ALL positions of the spindle.

In performance, it means accurate, smooth power delivery and long, trouble-free operation.

The multiple spline driven Cincinnati Bickford Super Service Spindle—with its large thrust bearing and its special sliding sleeve—never feeds away from its bearings.

This modern, up-to-date design, with 36 speeds and 18 feeds, also gives a maximum tool capacity for any given size.





THE CINCINNATI BICKFORD TOOL CO. cincinnati 9, Ohio U.S.A.



#### THE ERA OF MERCHANDISING

Recently we returned from a trip to the East where we talked with many executives of the metalworking industry in an effort to plumb their thinking on the future of business. Unquestionably, in the East, as well as here in the Middle West, business is down slightly over last year. Some manufacturers feel an unpleasant pinch. others are running but slightly behind last year's orders. But from neither did we get the slightest impression of pessimism. Wherever we turned the same thought was voiced: the leveling off of business is good for the economy; we expected it, now it's here.

Everybody was quietly confident over the future. No one expected to find boogey-men around the corner, nor any witches to confound business.

The president of one New England shop, employing almost 700 people, had this to say:

For the last four years we haven't known from one day to the next what delivery, prices, demand, or the labor situation would be. It was almost impossible to plan production for maximum efficiency. Now, with a leveling off of business we'll not have so many orders, that's true, but we can begin to plan for streamlined production, and can expect deliveries and prices, and labor productivity to hold steady for long enough periods to enable us to produce with maximum economy. Even if orders are off we believe our stabilized production will allow us to plan on a

1949

profit, even though our prices will be cut as soon as prices of materials drop.

When asked whether or not he planned to curtail purchases of new equipment, he said:

If we can produce more economically with a new piece of equipment, we'll buy it. But the proposed productivity of the equipment and the more economical operation of it must be proved. Some one must do a selling job on us, just as we expect to go out and really sell our equipment. This leveling off period is important, not only from the stabilizing influence it will have on the economy as a whole, but also in its change of emphasis. For many war years, and post war years we lived in the era of production and more production. Merchandising was merely its handmaiden. Now we are in the era of merchandising, of selling, back to the days of hawking our wares. If we do that well, get eight hours of sleep, eat three square meals a day, we needn't worry about the future.

Thus a New England executive. Three thoughts, which by the way, were voiced by other executives with whom we talked, bear repeating. They are: even though we feel the pinch, and will feel it more as the year lives on, the leveling off of business is good for its stabilizing influence on the economy; no plans are afoot to hack madly and indiscriminately at appropriations for the purchase of new equipment and tools; selling and merchandising efforts

must be redoubled.

William 7 Schleicher



#### If Alloys Could Talk ...

If alloys could talk-could correctly identify themselves, state their hardenability, their mechanical properties and their best working temperatures-the tasks of specifying, buying and heat treating would be greatly simplified and virtually mistake-proof.

Although we stock no talking steels, we put Ryerson alloys through conclusive hardenability tests-literally make every heat in our stocks reveal every essential fact about itself. Then we carefully record the information on a Ryerson Alloy Certificate delivered with the steel.

Because we make our alloys tell all, you're able to specify and buy the safe way-on the basis of hardenability. Because we send a Ryerson Alloy Certificate with every shipment, your heat treaters are provided with the information they need to do a quick, accurate job.

Large stocks of Ryerson certified alloys are in stock for immediate delivery. When you want quick shipment of any alloy requirement call your nearest Ryerson plant.

#### PRINCIPAL PRODUCTS

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### NATCO HOLEWAY

## Cylinder Block Processing Machine

by

R. A. Schafer.

Chief Development Engineer, National Automatic Tool Co.



This special machine, used by one of our leading automobile manufacturers, drills, reams, chamfers, and taps 56 cylinder blocks per hour. Described is the station-by-station operation of the machine; indexing, locating, and clamping circuit; tapping units, etc. The editors of the BLUE BOOK are pleased to present a detailed description of this machine to its readers.

A HOLEWAY processing machine built by the National Automatic Tool Company for a motor company is one of the units in their cylinder block line producing 56 blocks per hour net. This Natco Holeway is a straight line indexing machine in which the cylinder block is indexed progressively through the machine. In seven stations work is performed on various faces of the cylinder block.

A total of 14 spindle heads are employed, 9 of which are hydraulic feed and 5 mechanical feed. The hydraulic feed heads perform such operations as: drilling, reaming, spotfacing and chamfering. The mechanical feed heads are all employed for tapping operations.

A control push button station controls the automatic cycling and thru color lights indicates the sequence of operation. Adjacent each working head a separate push button control is provided for setting up operation of the individual head.

A 15 position straight line indexing fixture holds one cylinder block in each position.

The fixture is hydraulically operated and electrically controlled thru an automatic cycle of indexing, locating, and clamping the part progressively thru the 15 stations.

The fixture is completely interlocked electrically to insure part location and clamping before machining operations are initiated.



### THE MACHINE PERFORMS THE FOLLOWING OPERATIONS:

### Drills

- 1 hole- 5/16 dia.
- 1 hole- 3/8 dia.

### Chamfers

- 4 holes- 9/16 dia. x 90°
- 22 holes— 7/16 dia. x  $90^{\circ}$
- 8 holes- 5/8 dia. x 90°
- 2 holes—11/16 dia. x  $90^{\circ}$

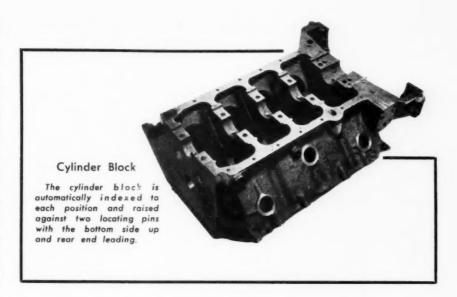
### Reams

2 holes- .3717/ .3714 dia.

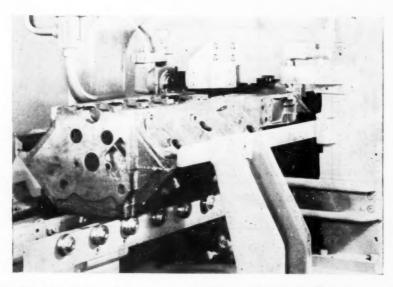
- 2 holes— .3081/ .3078 dia.
- 6 holes—1.497 /1.4967 dia.

### Taps

- 2 holes 1/4 Straight Pipe Thread
- 1 hole 1/4 -18 Thread
- 4 holes 3/8 -16 Thread
- 4 holes 7/16-14 Thread
- 8 holes 1/2 -13 Thread
- 2 holes 9/16-12 Thread
- 2 holes 5/8 -11 Thread

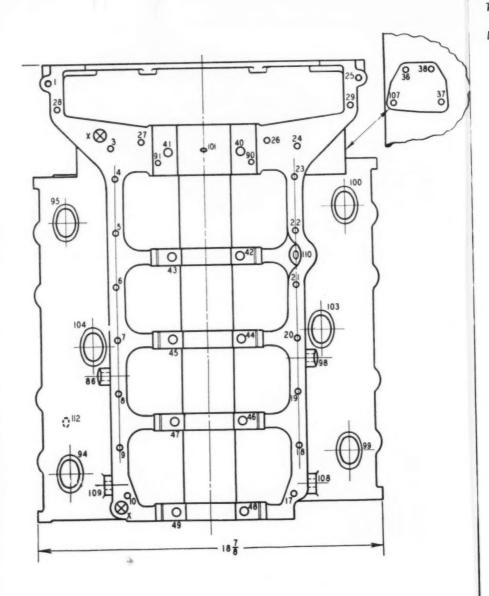


STATION NO. 1 Loading



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The operator loads a block, presses a button, and the following operations are completed automatically.

Read this chart upwards, starting with position No. 2 (Idle stations omitted)

### Left Hand Heads

STATION 14

Tap 1 hole 86. Tap 1 hole 109.

STATION 12 Idle

STATION 10

Spotface 1 hole 109.

STATION 8

Ream 3 Welch plug holes 94-95-104.

STATION 6 Idle

STATION 4

Tap 1 hole 110.

STATION 2 Idle

**Right Hand Heads** 

STATION 14 Idle

STATION 12

Tap 4 oil pump mounting holes 36 to 38 incl. and 107. Tap 1 hole 108. Tap 1 hole

> STATION 10 Idle

STATION 8

Ream 3 Welch plug holes 99-100-103.

STATION 6

Chamfer 4 oil pump mounting holes 36 to 38 incl. and 107. Spotface 1 hole 108.

STATION 4

Redrill to depth 1 hole 112.

STATION 2

Fri!! 1 hole 112 to half depth.

### **Vertical Heads**

STATION 14

Tap 16 crankcase mounting holes 4 to 10 incl., 17 to 23 incl., 26 to 27 incl.

STATION 12

Tap 4 crankcase mounting holes 1-3-24-25. Tap 2 main bearing cap holes 40 and 41. Tap 8 bearing cap holes 42 to 49 incl.

STATION 10

Chamfer 14 crankcase mounting holes 4 to 9 incl., 18 to 23 incl., 26-27. Ream 2 holes 82-29. Ream 2 holes 90-91. ....

> STATION 8 Idle

STATION 6

Chamfer 4 crankcase mounting holes 1-3-24-25. Chamfer 2 crankcase mounting holes 10-17. Chamfer 2 holes 28-29. Chamfer 2 main bearing cap holes 40-41. Chamfer 8 bearing cap holes 42 to 49 incl.

> STATION 4 Idle

STATION 2

Drill 1 angular hole 101.

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STATION No. 2

Left Vertical Angular Head
Drill ane 5/16 diameter hole
Right Lower Horizontal Angular Head
Drill ane 3/8 dia. hole to half depth.

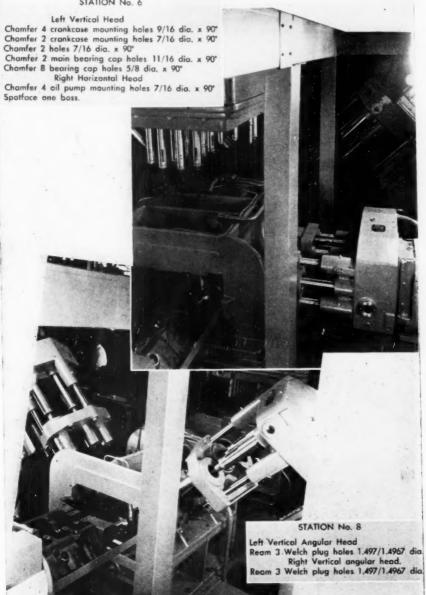
### STATION No. 4

Right Lower Horizontal Angular Head Redrill 3/8 diameter hale to depth. Left Vertical Angular Head. Tap one 1/4 straight pipe thread

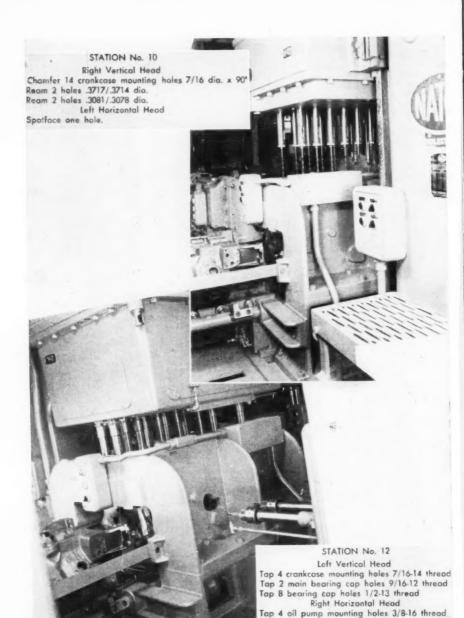


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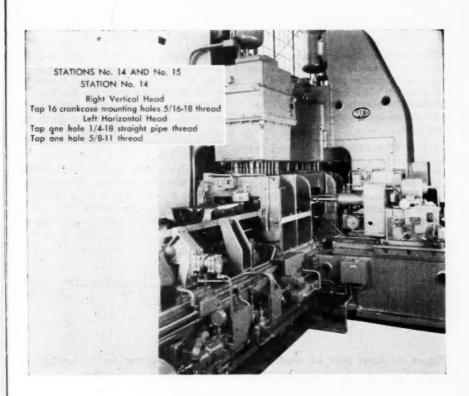
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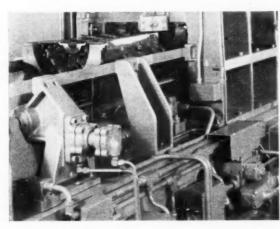


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Tap 1 hole 5/8-11 thread Tap 1 hole 1/4-18 thread





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STATION NO. 15 Unloading

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### INDEXING, LOCATING AND CLAMPING CIRCUIT

The indexing, locating and clamping circuit is a sequencing operation in which all sequence movements are interlocked by electrical limit switch indication. No movement can be initiated until the processing operation has been completed.

Fig. A. Hydraulic power is supplied the system by a Vickers Double Pump and combination valve unit. A manifold pipe system running the length of the machine supplies fluid to controls located adjacent the several operating positions. To initiate a cycle a four-way solenoid is energized. As the valve is positioned a cylinder rotates the locator bar and shuttle bar to a position with the shuttle bar lug in engage with the block and the locator bar lug disengaged. When this movement is complete, a limit switch energizes the shuttle bar four-way valve which causes the transfer shuttle bar to move the block to the next position. When this movement is completed a limit switch energizes 7 four-way valves (one for each work position) and applies power te

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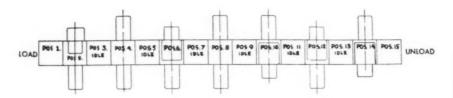
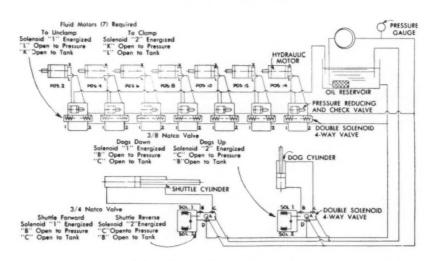


Figure A. Floor plan of machine and hydraulic diagram for traversing and clamping cylinder block



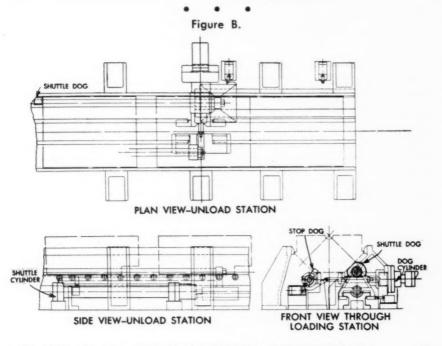
to each of the working station elevator hydraulic motors. A pressure reducing valve in the forward, or clamp side of each motor allows the torque valve of each motor to be adjusted to required force for each station. This is important when distortion may cause inaccuracy in finishing operations while high clamp force is required in our machining operations.

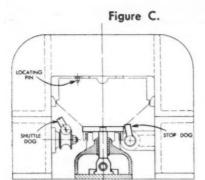
In the first working station, an accurate limit switch indicates when the block is seated in location on the rest buttons within .005". This indicates that the locating pin holes allow the block to properly seat and the pan rail surfaces are flat within .005".

When all clamps are effective and the block check switch is closed, the machining head cycles are initiated.

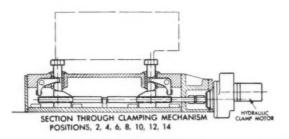
Figure B. In transferring from station to station, the blocks are located properly either by the engagement of the shuttle dogs on the transfer bar while in motion or the stop dogs on the locator bar while at rest.

Fig. C. Elevating to working position over the pan rail dowel pin holes and clamping is accomplished thru the use of a geared head Vickers Fluid Motor, a right and left hand floating screw, flat cams and two platform elevators. The torque applied at each station is independently a djusted to suit the working requirement.





FRONT VIEW THROUGH POSITION 2, 4, 6, 8, 10, 12, 14 SHOWING SECTION THROUGH CLAMPING MECHANISM



The Natco Holeunits are self contained hydraulic feed unit type drilling heads on the front of which are mounted spindle heads to suit the application.

An electric motor, mounted at the rear, drives the spindle head and the Vickers hydraulic feed pump.

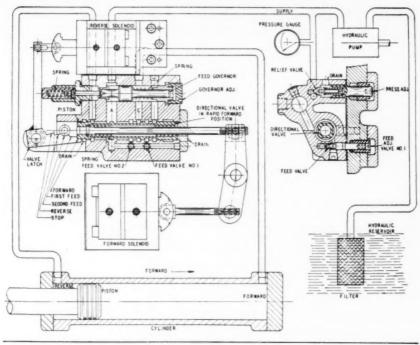
The main housing is used as the hydraulic oil reservoir and encloses all hydraulic tubing to the system.

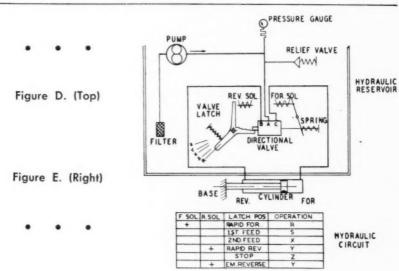
The ways are lubricated by a piston type pump operated by cam action during the reverse movement of the unit.

Fig. D. A cycle control panel mounted on the right side of the reservoir consists of a directional control spool type sliding valves, and offset poppet type relief valve, a feed governor (differential pressure valve), two feed control apertures, electric solenoid for the directional valve actuation and mechanical means required. This unit is a complete control supplied by a pump and connected to the actuation cylinder.

The actuation cylinder is a 2:1 differential type, which is used as a differential in traverse movement, while in feed only the large or piston end area is used. This arrangement reduces the traverse volume required allowing the use of smaller pumps.

Fig. E. Circuit Control Rapid Traverse to work. To start a cycle the forward solenoid is energized. The solenoid shifts the directional valve spool to the right, compressing a spring within the hollow spool. In this position a spring actuated latch engages the spool and holds it in locked position against





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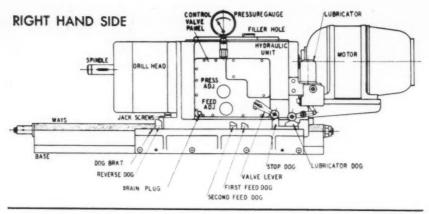
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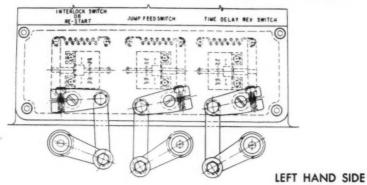
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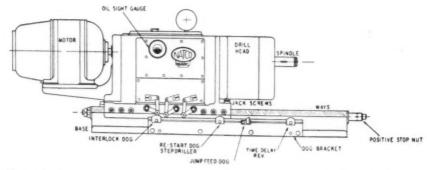
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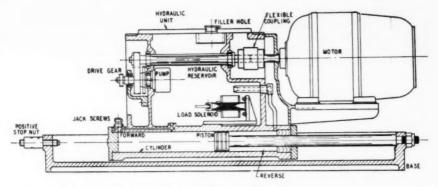




the spring pressure.

pump enters the valve at port "A" and the cylinder and port "C" is the piston

is directed by the spool to ports "B" Fluid pressure from the Vickers and "C". Port "B" is the rod end of



or large end. The differential actions cause the unit to traverse forward at a rate equal to the volume of the pump divided by half the cylinder area.

1st Feed. As the unit approaches the work, a cam dog operates the latch moving it one notch and allowing the spring pressed spool to move one notch to the 1st feed forward position.

Fluid pressure from the pump then flows through port "A" to port "C" to the large end of the cylinder, while the rod is opened to the reservoir through port "B". The flow from port "A" to "C" is restricted by an adjustable aperture for feed regulation and a differential governor which maintains a constant pressure differential across the aperture regardless of the cylinder work load. This action insures a constant rate of traverse, idle or under varying load, preventing break through lunge or variation of feed due to change in material or sharpness of the tools.

2nd Feed. When required, a 2nd feed is provided for such operations as counterboring, chamfering or spotfacing.

A cam dog, properly positioned, trips the latch one more notch, allowing the spool to move another step to the left.

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The flow path is the same as 1st feed except aperture No. 1 is blocked and aperture No. 2 is operative. Aperture No. 1 and No. 2 are independent so that the setting of one does not ef-

fect the other.

Reverse Traverse. Where the reverse point is relatively inaccurate and no finish face is involved, the reverse is accomplished by a cam dog operating the latch allowing the spool to escape one more notch to the left.

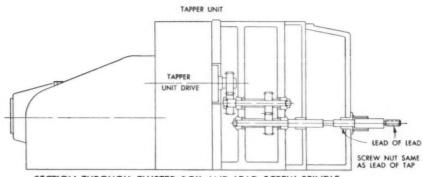
Fluid pressure from the pump enters the valve at port "A" and is directed through port "B" to the rod end of the cylinder. The piston or large end of the cylinder is open to the reservoir through valve port "C".

When accurate depth stop is required before reversal, the valve is reversed electrically through the reverse solenoid.

The feed movement is stopped by a positive abutment and a time period dwell provides clean-up time. Prior to engaging the stop a limit switch is operated, which sets in motion an adjustable time relay at the termination of the set time. This relay energizes the reverse solenoid and the reverse action takes place as described.

Stop or Neutral. When the head is reversed to the start position, a cam dog operating the latch allows the spool to move one more notch to the left.

Fluid pressure from the pump enters the valve port "A" and is directed to the reservoir. Both cylinder ends are open to the reservoir through ports "B" and "C". In the stop position, a limit switch is contacted, which completes a circuit from the Forward start push button to the "Forward" solenoid circuit. When the head moves forward, this circuit is broken so that the "Rapid forward" circuit can not be held in when the 1st feed cam dog is reached and the head traversed at the rapid rate into the work.



SECTION THROUGH CLUSTER BOX AND LEAD SCREW SPINDLE

BEVERSE OR STOP CAM

CLUTCH LEVER
CLUTCH SHAFT

SWITCH THAT IS CONTACTED WHEN TAPS ARE RETRACTED IS THE STOP SWITCH, THE OTHER SWITCH IS THE REVERSE SWITCH.

Figure F. (Top)

Figure G. (Right)

VIEW WITH TOP COVER REMOVED

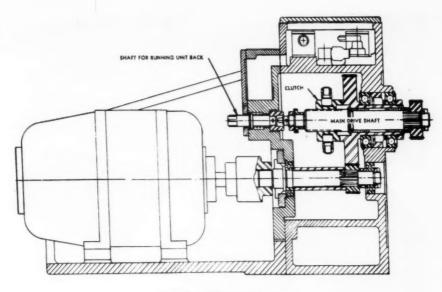
Lead Screw Tapper Natco Holetappers are self contained individual lead screw tapping units.

Fig. F. Each tap spindle is a lead screw of a pitch corresponding to that of the tap carried by the spindle, this assures exact timing of the tap and spindle feed rate. Several sizes and varying pitch taps driven from one drive can be accomplished without the use of lost motion couplings or end-

wise floating tap drivers.

The tap spindles are driven through conventional type gear heads. The gear box is driven by a reversing type electric motor which is automatically cycled thru limit switch and push button control.

Fig. G. and H. As a safety, a mechanic clutch is provided in the main drive from the motor. This clutch operates only in case of electrical fail-



#### SECTION THROUGH UNIT

### Figure H.

0 • •

ure. The operating dogs are set to open the clutch if the travel exceeds the limit set by the limit switch oberation. The clutch must be reset before operation can be resumed, thus preventing continuous use of the clutch

when electrical trouble occurs,

The mechanical feed is used in preference to a hydraulic because exact feed can be maintained for each individual tap with a minimum of mechanism. THE END.

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Parts distribution has been centralized in two plants, Toledo, Ohio and Hastings, Michigan. Presses and other metal machinery bearing the trademarks of Bliss, Toledo, Consolidated, Marquette, Stiles and Cleveland are serviced from these points. It was determined that 70% of the replacement parts could be carried in finished in-

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During the last 90 days, shipments of replacements parts exceeded monthly averages of 1947 and even greater improvement is expected. Enlarged facilities, concentration of engineering records, and an increased investment in inventories made the program possible. A. A. Frank, for 17 years assistant general manager of Chrysler Corporation Parts Division, has been named parts manager of Bliss, in charge of the program.



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### MODERN WELDING PROCEDURES IN

# Building Motor Car Bodies



1949

E. O. Courtemanche,
Welding Engineer, Briggs Mfg. Co.

Welding procedures in automobile plants follow to trend toward automatic performance set by machining operations. At the Briggs Mfg. Co., where about 10,000,000 car bodies have been turned out, approximately 20% of all operations concerns welding. A general description of procedure, equipment used, and technique employed are described by the author.

WELDING has become an increasingly more important part of the manufacture of passenger car bodies since the early days of the Model T and the Dodge Victory six. From the wrap-around body jobs of the twenties to the ultra-stream-lined creations of today, the emphasis on cost-saving and labor saving has promoted great advances in welding equipment and techniques. The Briggs Manufacturing Co. has been alert to this progress in welding practices and has endeavored to utilize these developments in its production of nearly 10,000,000 automotive bodies It can be conservatively estimated that 20% of the production man-hours in Briggs plants in Detroit and Evansville, Ind., are devoted to welding operations.

From the earliest flash or butt welders, suitable only for small parts or subassemblies, to the newest multi-transformer setups with their batteries of guns working on an entire top or underbody assembly, the trend has been to more automatic equipment and faster and better welds. A review of these developments over the years to show where we stand today may be in order.

The first resistance welder used in the industry was

Figure 1. This projection welder is being used successfully at Briggs on parts requiring as many as 13 spots, or projections. Certain parts which require more than one spot in a comparatively small area can be produced more economically when produced with one stroke of the welder instead of several strokes.



what is commonly called the pedestal welder. This machine was foot-operated and had a very poor mechanism controlling the weld time and pressure. Consequently, the strength of the spotweld was determined more or less by the instinct or training of the operator as to how long the current should flow before depressing the pedel far enough to shut off the welding current and applying the forge pressure.

Today these resistance welding machines have three means of operation: motor-driven cam-operated; air cylinder; and hydraulic cylinder. In addition, precise methods for obtaining the correct relationship between weld time and pressure on the electrodes are used, thus assuring good welds at all times. This type of welder, today as in the past, only lends itself to the production of small sub-assemblies

The next step forward was the press type welder or, as it is more commonly called, the projection welder, figure 1. This welder was developed when it became apparent that certain parts which required more than one spot in a comparatively small area could be produced more efficiently and cheaper if they could be produced with one stroke of the welder instead of several strokes. This type of welder has been used successfully in one Briggs Plant on parts requiring as high as 13 spots or projections.

The projection welder still has an important role in automobile body production on such assemblies as door handle reinforcements to door panels, door check strap brackets to pillars and similar components.

It was about 1931 when the first successful portable welder was developed. It differed from previous experimental types of portable welders by using an air cylinder to operate it instead of a hand-operated gear and rack to move the electrode to contact the work.

The machine also incorporated the correct weld time in relation to pressure on the electrodes. This important development for the first time allowed major assemblies to be built complete in their respective fixtures on a moving conveyor. It permitted the fixtures to be built very substantially. This assured a more accurate and better built body, and increased the number of pieces that could be built with less man-hours.

Today, portable welders still have a



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\*Straight boring . . . as shown at left used as offset boring tool.



\*Facing . . . up to 10" in diameter.



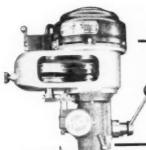
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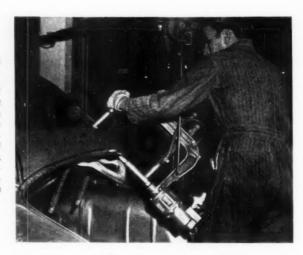
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Figure 2. Portable welders are important in the assembly of an automobile body. In the past the design of automobile bo dies posed difficulties because welders were difficult to handle in tight places, thus necessitating the substitution of smaller electrodes. However, design and welding engineers, working closely together have solved this problem.



major role in the assembling of an automobile body. One of the difficulties encountered with this type of welding is accessibility to the place where a weld is required, figure 2. The design of the body is chiefly responsible for this condition. When this occurs, the electrodes on the particular welder have to be made much smaller than is normal and this results in a higher electrode cost. In the past this was not given enough thought by the body design engineers. But today this condition exists only to a small degree, as our body design and welding divisions work very closely to minimize these hard-to-get-at places.

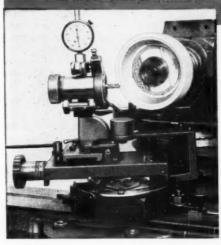
Approximately at the same time that portable welders were introduced, bar welding fixtures came into use, employing expansion guns to perform the welding operation. This permitted large panels such as inside and outside door panels, floor pans and their respective reinforcements to be welded much faster than previous welding set-ups because it allowed two or more operators to work at the same time on the same fixture.

These were followed shortly by the hydro-matic multi-spot welder. This machine consisted essentially of an oil-distributing valve, oil-operated welding guns, and the electrical system comprising both the secondary and primary circuits. Depending on the capacity of the valve, any number of guns from two to eight could be operated off of one port. This meant that if two to eight transformers in the case of direct welding or one to four transformers in the case of series welding were used, two to eight could be made simultaneously from each port of the valve.

Obviously, all of the parts produced on a bar welding machine could be produced on this new type of welder much cheaper and much faster because we now had a machine that, after being loaded and started on its cycle, could finish it automatically. This provided a definite time cycle that could be counted on to produce so many pieces per hour.

This type of welder has been constantly improved and in some instances, such as welding the inside and outside door panels after clinching, has

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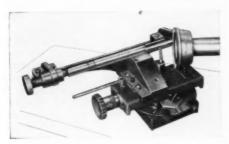
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THE GAIRING TOOL COMPANY, 21228 Hoover Road, Detroit, Mich.



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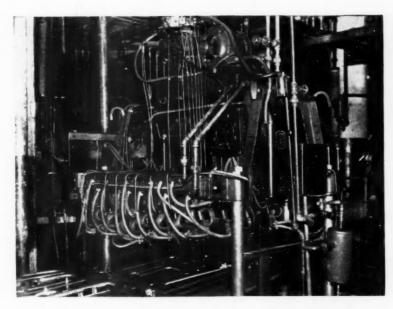
been made to operate automatically in conjunction with the clinching press. This particular set-up is still in operation on present production in Briggs plants, figures 3 and 4.

As the larger assemblies, such as front and rear floor pans and their reinforcements, became more complex, thereby requiring more spots, it became increasingly difficult to hold these parts in place until they were welded. This was caused mostly by the vibration set up by the welding guns pounding against the work as each set of ports was closed and opened. A newer design called ultra speed had been developed and most manufacturers made use of it, figures 5 and 6.

One of the chief advantages of the ultra speed welding is being able to have all of the welding guns contact the work at the same time, thus assuring that the parts are in alignment while being welded. Each ultra speed unit has its individual transformer and in most cases employs series welding. With all the welding guns contacting the work, considerable time is saved over the hydromatic type by not having to move each bank of guns to and from the work before the next bank of guns can be used.

This type of welder has a mechanism built into it for breaking both the primary and the secondary, or welding circuits. After breaking the welding circuit to any set of welding guns, it cannot be re-closed until the ultra speed unit reverses. This principle allows all of the welding guns to contact the work simultaneously. It also shortens the welding cycle, because it only takes about ten cycles of time to change from one set of guns to the next set, against 18 to 20 cycles for the hydro-matic type.

We further shortened this weld time at Briggs by having the welder manufacturers build into our ultra speed



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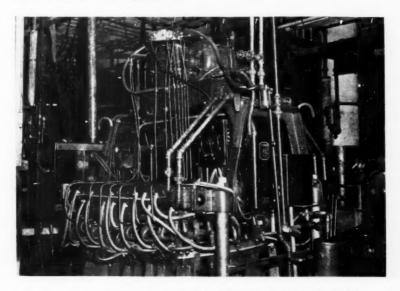
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Figures 3 and 4. A Hydro-matic multi-spot welder. Welding inside and outside door panels after clinching is performed automatically in conjunction with the clinching press. This set-up is in operation today at the Briggs plants.



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The new Vise's specially slotted removable jaw enables it to hold odd shaped pieces, considerably increasing the Hand Miller's production. The new Safety Cutter Guard makes hand injuries virtually impossible.

The Rouse Hand Miller is an efficient, high speed, ball bearing, motor-driven machine for handling light cuts in brass, aluminum, steel, plastics, and other materials. It mills small parts fast—accurately—inexpensively, eliminating costly set up time and making it possible to use ordinary, inexperienced help.

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units a method of using two transformers instead of one. This resulted in a time cycle on one machine of three pieces per minute, as against a total of three pieces per minute on three similar machines using hydro-matic units.

Recently, another welding method has come into popular usage. This is known as the multi-transformer method of welding, figures 7 and 8. This method uses a group of small transformers with one or more secondaries to each transformer. A set of welding guns is used with each secondary. This particular method for the first time allowed the transformers to be placed close enough to the work, so very short secondary leads could be used between transformer and welding gun, 10 to 16 inches.

It also kept the secondary connections side by side, as they should be, instead of in a large loop spread far apart, as in the hydro-matic and ultra speed units. This compact secondary loop also allows the transformers to be built smaller, making a more compact and neater appearing machine.

The smaller secondary loop allows more transformers to be fired from each phase of a three-phase system, too, without imposing a larger load on the system. For instance, four multi-transformers each having four guns can be fired successively on each of the three phases, making a total of 48 spots produced at the same time. This would impose a load of 160 to 200 K.V.A. on each phase.

Contrast this with the hydro-matic and ultra speed methods. To produce the same amount of spots at once, they would require 400 to 500 K.V.A. on each phase. The multi-transformer enjoys this advantage, too, in a very much shorter weld time. Suppose an assembly is scheduled to have 144 spots. With the multi-transformer method, it would



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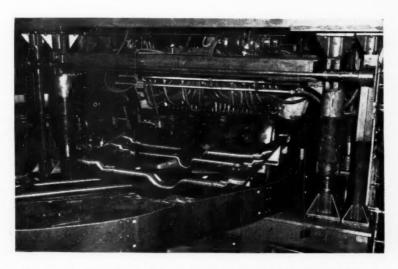
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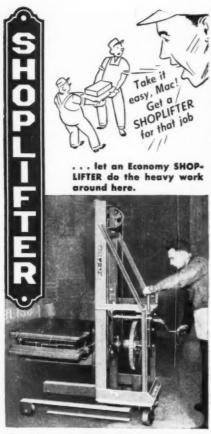
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Figures 5 and 6. As front and rear floor pans and their reinforcements became more complex automatic units possessing greater speed were utilized. With these welders all welding guns contact the work at the same time thus assuring alignment of all parts during the welding operation.



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Every shop needs a SHOPLIFTER. Saves men, saves materials. Besides handling heavy dies, the SHOP-LIFTER can stack drums and boxes, unload street trucks, pick up skids and be used as an adjustable height table.

All steel, are welded frame. Easily operated hoist unit with automatic brake, safely holds load at any height.

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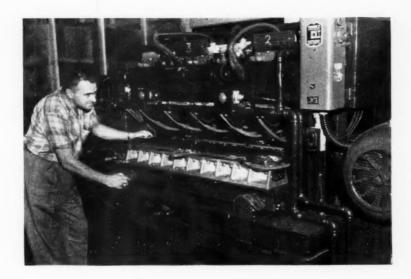
4505 W. LAKE STREET . CHICAGO 24, ILL.

take three sperarate firings or weld times. Assume a weld time of 20 cycles, two cycles to change the firing relay from one bank of transformers to the next bank, 10 cycles squeeze time and 10 cycles hold time. The total weld time would take only 84 cycles, or a trifle over one and one half seconds. This compares to three to three and one half seconds for the ultra speed, and six to seven seconds for the hydromatic method. This considerably speeds up the complete cycle of the welding machine and will produce quite a few pieces more per hour, proving better and easier loading methods are used to take advantage of this short weld time.

One of the newest methods to come into use is poke spotwelding, figure 9. This method employs a lightweight gun, a fixed electrode, a device for cooling the electrode and a means for surrounding the weld area with argon gas. To make the weld, the operator pushes the gun against the surface to be welded, opens a valve which starts the gas flowing and closes a switch in the handle of the gun. This causes a high frequency current to flow from the electrode to the work.

The high frequency current is used to start the flow of the high welding current. After a pre-set time interval. which can be varied to suit the material being welded, both currents are shut off and the weld is complete. This method was developed primarily to weld in places where portable welders could not be used. For example, it is used for boxed in sections which occur at pillar reinforcements to the floor pan, seat risers to the floor pan and similar locations. Undoubtedly, as poke spotwelding is improved, there will be many more applications where it can be used to advantage.

Before closing this discussion, it is only fitting that arc welding and oxyacetylene welding should be mentioned.



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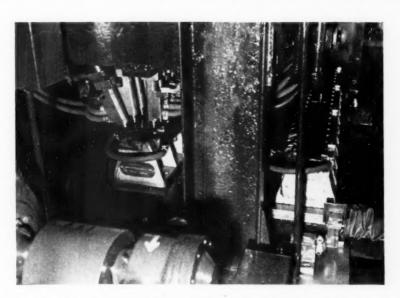
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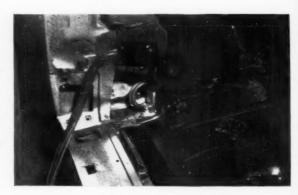
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Figures 7 and 8. The multi-transformer method of welding uses a group of small transformers with one or more secondaries to each transformer. A set of welding guns is used with each secondary. With this unit welding time is reduced, and loading and unloading is accelerated.



When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

Figure 9. One of the newest welding methods is poke spot welding. This method employs a gun, a fixed electrode, a device for cooling the electrode and a means for surrounding the weld area with argon gas. This method was developed primarily to weld in places where portable welders could not be used.



They still are used on parts of the motor vehicle body, such as in specialized low-production models like the convertibles and station wagons.

The development of welding in the automobile industry over the years has been evolutionary rather than revolutionary. Constant improvements are

necessary in order to speed up manufacturing operations, make a better product and to reduce costs. This is the constant objective we have before us in the Briggs organization. This material was presented at the SAE meeting. March 1948 in Detroit. It is here reprinted with permission. THE END.



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For more information on the longest-wearing, precision surface plates ever made-write: Norton Company, Worcester 6, Mass., for our free Bulletin No. 1174.



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Lecture No. 16

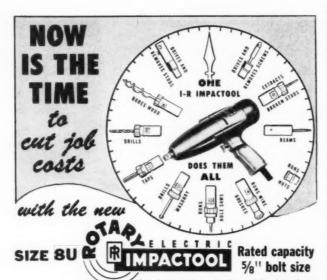
THE RESPONSIBILITY OF THE MACHINE TOOL DISTRIBUTOR TO THE MACHINE TOOL BUILDER

by

L. W. Scott Alter President and General Manager American Tool Works Co.

Just as the machine tool builder has definite obligations to his distributors, so the distributors have definite and well defined responsibilities toward the machine tool builders. What they are, as well as the importance of constantly maintaining amiable relationships between builders and distributors, is discussed in detail.

The MACHINE and TOOL BLUE BOOK is happy to present to its readers the complete lectures delivered at the Sales Refresher Course at Cornell University, July, 1948. The course was sponsored jointly by the National Machine Tool Builders' Association and the American Machine Tool Distributors' Association. While lectures deal primarily with the selling of machine tools the fundamental sales principles can be adopted profitably by the manufacturers of general industrial products. The editors thank the NMTBA, the AMTDA and Cornell University for their cooperation in making this material available to their readers.



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KIT No. 1 — IMPACTOOL, with standard equipment, plus a complete assortment of attachments in a Handy De Luxe Case, 110 V or 220 V, AC or DC models available.

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An I-R Impactool pays for itself in 30 days with normal use.

Ask your Ingersoll-Rand distributor for a demonstration.

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THE DISTRIBUTION of "general-purpose machine tools" through a dealer organization seems absolutely sound to our company, despite real or imaginary shortcomings, which we feel are offset in turn by real or imaginary good points. Naturally, I am going to emphasize the latter because I feel they have the preponderance.

Analogies often help one appraise things better than a head-on collision, so I have cast about for an analogy for a Machine Tool Dealer and I think I have one—"The Family Doctor."

I can almost hear that fellow in the

back row jeering, "How's that for a hot one? Horse and Buggy stuff!!! Does he think he can sell the idea on that basis?" I'll admit I decided to go ahead using this analogy with some fear and trepidation, but now the die is cast.

I can point with pride to the fact that our family was brought through birth, the measles, to arthritis by a "general practitioner," so perhaps I am prejudiced, but the fact remains that I'm still hale and hearty.

This grand old fellow knew us all personally, our strengths and weaknesses, he was a friend we trusted. He wasn't too hot on the subject of germs for I have often seen him pick up a pill that had dropped on the floor and pop it into somebody smouth. Still we lived and grew up.

He had to be able to diagnose our ailments by looking at us, a gentle jab in the ribs, a glance at our tongues, plus a few well-thoughtout questions. The

out questions. The remarkable thing was that he hit the right answer a large percentage of the time. To do this he had to be familar wth all the things that attack the human carcass.

So much for the old time M.D. Where does this analogy come in, as compared with a machine tool dealer? Let's lay these good points down side by side. "He knew us all personally."

One of the best assets a dealer's salesman can have is to know his customer peronally. If he has a variety of things this customer needs, he naturally has more frequent contacts and if the right

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No more annoyingly painful steel slivers to cut into your hands, right through your gloves. The diamond-fluting does it ... produces harmless, powdery chips you won't even feel. The new P&W Carbide Di-Bur is easily controlled on any contour, and leaves an exceptionally fine finish, even with slower speeds. It's a pleasure to work with it.



Contact your nearest P&W Kellerflex expert for a demonstration of this new, smooth-cutting P&W Keller Carbide Di-Bur

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The sleek stainless steel skin used in large quantities for aircraft is finished faster, at less cost, with specially designed Jewel silicon carbide paper belts.

Aluminum alloy castings are finished more efficiently in a major aircraft plant with Silver Streak belts. Like all Jewel belts, they have AP's exclusive smooth-running Velvet Joint.

Remember, there's a Jewel product for every sanding, polishing and grinding need.





sort of chap, a friendship is almost sure to develop.

"He knew our strengths and weaknesses."

In the case of the dealer's salesman, he is studying this customer as a person, he learns his likes and dislikes, he becomes familiar with his plant equipment, its strengths and its weaknesses. A direct parallel.

"He wasn't so hot on germs."

True, a man who sells a variety of machines can't be as expert concerning any one machine as a specialist is. However, there is always a factory expert in the

background who can be called in if and when the going gets too heavy.

"He had to diagnose our ailments."

There is usually more than one way of skinning a cat. If a customer has a job or series of jobs to do there may be several approaches, using perhaps entirely different machines. The dealer's salesman knows something about all of them and can point out the different approaches to his customer.

This is better, I feel, than the case of the North Georgia doctor who always began by throwing his patients into fits. When asked why he did this he replied, "Because I'm hot on curing fits."

Summing up this whole thing, we must conclude that the thing a dealer's salesman does is to develop his relations with a relatively few customers. He specializes on them as customers. Their needs are his needs, no matter matter what direction they may take. No one will be in-

No one will be inclined, I think, to discount this close relationship.

This is as far as I can go with the analogy because the family doctor was notorious for letting his bills run and often when he passed to his reward all that was left for his family were a lot of unpaid accounts.

The dealer, on the other hand, passes on all credits and collects his own bills. He is qualified from first-hand contacts to know where credit is justified and where it is not.

He is a part of his community, has an office and a staff of assistants, perhaps



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Curtis makes universal joints exclusively and their 25 years experience is yours to command. Special machining for specific applications is done before assembly — saving money and insuring accuracy.

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a small stock of new and/or traded-in machines. But enough of these "pats on the back."

Let's look at the other side of this re-

lationship:

Since a dealer represents a group of factories, naturally there is bound to be internal competition for his, the salesman's, time. You hear, ever so often, that such and such a salesman is putting in all his time on some one line of tools and neglecting the other accounts. This can come about because the salesman decides he's "hot on fits" or because the sales resistance is less in some quarters than in others, and he gets a commission on sales made. For this reason the long-pull aspects of the situation are likely to leave him pretty cold.

Then again, there is what I call "the pair of strange bulldogs attitude" on the part of the dealer's salesman when a factory representative is called in on a job. Teamwork between these two salesmen, factory and dealer, is of the utmost importance if an order is to result. In time this adjusts itself, but I can recall the mental suffering I have personally gone through when I teamed up with a dealer's man for the first time. I could read his thoughts which went something

like this:
"I wonder if this bird is going to queer me with my customer?"-"What does he know that I don't?"—It's his responsibility from now on, if we don't get this order."-"I'd have landed the order anyhow, now he'll get all the credit." — "I wonder if I can

stick him for a drink?" etc. There is no more difficult situation to meet than when a factory representative realizes he is talking to two "grand-stands" instead of one. There are times when he has to steel himself against the very man he is trying to help get an order because of that man's antagonistic

attitude.
Then there is the William Jennings Bryan type of dealer's salesman, the fellow who is in love with the sound of his own voice, and who therefore never lets the factory man get a word in edgewise. The feeling of utter frustration and

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Behind the Nicholson guarantee of "Twelve perfect\* files in every dozen" are 85 years of experience in making files exclusively. Nicholson file-cutting machines and file-manufacturing methods are widely regarded as the most modern and efficient. Every Nicholson and Black Diamond file is designed, produced and tested to assure the best possible file performance and the longest possible file life.

HOW TO USE AND TAKE CARE OF FILES is elaborately covered in Nicholson's famous 48-page illustrated book, "FILE FILOSOPHY" (new up-to-date edition just off the press). How many copies for "key" uses shall we send you? FREE.

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\*A "perfect" file is one which is precisionstraight, carefully balanced, uniformly hardened, accurately cut (with teeth of even height and sharpness), and made of the finest steel obtainable for the purpose.

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Tool life, speed of cut, increased production, depend upon the diamond tool. The patented STA-KOOL is provided with water ducts for wetgrinding and cooling fins for dry-grinding, thus keeping stone and setting at safe operating temperatures. STA-KOOL Tools last longer and cut costs from 30 to 50%. Catalog on request.

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rage which follows such an interview is beyond my powers of description.

What a grand feeling it is on the other hand, when a dealer's salesman says, "Let's sit down before we go in and I'll tell you all that has happened up to now. I'll give you the low-down on these fellows you'll have to talk to, what they like and don't like, so you will not inadvertently put your foot into something."

The next fellow I'd rather not recall; he is the sleep-walking expressman. He is the dealer's salesman, who after he has delivered the factory's representative to the lions, figures his job is done and promptly goes into a dream world, all of his own, only to be roused when it is time to crank up the old flivver and depart.

Fortunately, there are enough good dealers' salesmen to justify your faith in mankind. I can recall instances of superbooperation, of teamwork that just could not be defeated. It's always a joy to work with one of these men who plays ball for the real joy of the

Since a dealer has been assigned an exclusive territory in which he may sell the manufacturer's products, it is only proper that he should assume certain responsibilities

One of the first requisites is that an adequate force of salesmen having been employed to cover the territory fully and effectively, that these salesmen be given every opportunity to perfect their understanding of the machines they are selling through

sales meetings in the dealers' headquarters, through visits to the manufacturers' plants and through actual selling along-side of factory engineers in the field.

The salesman should invariably check up on all new installations going to one of their customers, to evidence the proper interest in this user's satisfaction with the purchase. Where serious complaints arise, they should be thoroughly investigated by the salesman so that in reporting same to the manufacturer, he can fully explain the difficulty involved. Such reports should be promptly made.



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remains static. This is important to the salesman because all direct mail advertising support is sent out to the list he himself provides. The dealer's office is expected to be punctilious in sending to the manufacturer copies of all quotations they make. This has several advantages: (a) It allows a

check to be made for inaccuracies. (b) It gives the manufacturer some idea of the current

manufacturer some idea of the current demand from which he can consider production schedules.

(c) It helps the sales manager to plan trips for factory sales engineers.

(d) It helps manufacturer's sales department keep track of pending deals, successful sales and lost orders

One of the best helps a dealer can supply is the bringing of a prospective customer to the manufacturer's plant to get a firsthand view of the product and to talk over his production problems.

The head of any dealer organization

can be very helpful in knowing the heads of the companies who are his important customers. Often the mechanical men run into a stone wall higher up in their organization. Sometimes this wall can be lowered if the top management can be approached by the dealer's top official, something which a salesman can't do for himself.

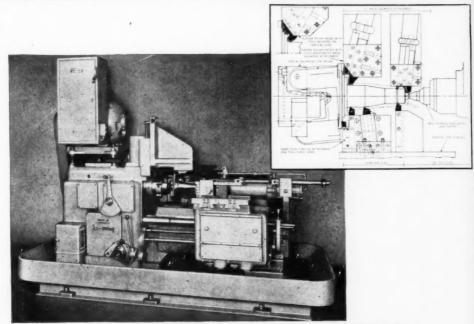
It is my considered opinion that dealers and the manufacturers they represent should stick together as long as humanly possible. Frequently, one or the other goes into temporary doldrums, but I feel it is better to weather these situa-

If any repair parts are needed, these should be stressed so that the service man does not arrive on the scene empty-handed and therefore unable to go ahead with his work.

The salesman should report all plants in his territory where business may possibly be had so that suitable mailing lists can be prepared both at the dealer's headquarters and the manufacturer's office. These lists are much better if they give the names of the men who are responsible for selecting the equipment for the plant. Such lists need to be continually revised as no organization

# MACHINE OF THE MONTH

PREPARED BY THE SENECA FALLS MACHINE CO. "THE So-owing PEOPLE" SENECA FALLS, NEW YORK



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Problem: To rough and finish face large flange and turn stem diameters of heavy truck Steering Knuckles in a single operation. Flange faces and diameters must be smooth and accurate. Stem bearings to be turned slightly oversize for grinding operation.

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Solution: The Model AR Automatic Lo-swing Lathe selected for this job was equipped with one standard front turning carriage, one standard automatic back squaring attachment and one standard vertical slide. The small line drawing shows the details of the tooling used on all slides. The flange faces and diameters are first rough turned with tools mounted on the automatic cam-operated back squaring attachment, while the stem is turned to grinding size simultaneously with this operation. The above tools then retract from the work and the flange faces and diameters are finished faced and turned with separate tools mounted on the vertical slide. This method produces a smooth, accurate job in a single operation with only one handling. The dotted line shows the amount of surplus material being removed, which is considerable on the flange end.

Our Engineering Staff will assist you in solving your tough turning problems.

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PRODUCTION COSTS ARE LOWER WITH So-swing

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Then be sure you're using a Star hack saw blade. They're designed and made to make cinches out of tough cuts. Only the finest steel is used — automatic machines shape teeth precisely — special heat treatment provides extra blade strength. As a result you get a faster, cleaner cutting blade that lasts longer.

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Your free copy of Star's booklet, "METAL CUTTING" and the new Star Wall Chart. Ask for these helpful guides to better selection, use and care of your hack saw equipment.



CLEMSON
CLEMSON BROS., INC.
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Manufacturers of Hack Saw Blades and Frames, Metal Cutting Band Saw Blades and the Clemson Model E-17 Lawn Machine.

tions out than to practice jumping around. Long-extended association with each other engenders a type of cooperation which can never be developed in a short period of time, even though there are some changes in personnel from time to time. End of Lecture No. 16.

Inexpensive Carbide Grinder accommodates tools having up to 1" shanks. Grinder is equipped for wet grinding and has a grinding spindle engineered to run smoothly at 9000 rpm. Diamond wheel has a full 34" wide grinding wheel surface for off-hand grinding. U. S. Diamond Wheel Co., Dept. BB., Aurora, III.

Surface Broaching Machines. Photos and text explain important points of design and operation and furnish general outline of the uses and features of the new Dual-Ram machines. Also included are dimensional drawings, specifications, operating data, accessories. Colonial Broach Co., Dept. BB., Detroit, Mich.

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# The COLOR tells the THICKNESS ARTUS Arbor Spacers made of plastic in vari-



ARTUS Arbor Spacers made of plastic in various colors identify thickness at a glance! .001, .0015, .002, .003, .005, .0075, .010-.030. Speed up accurate fitting at low cost. Write for folder.

## CONVENIENT TRIAL OFFER Handy Spacer Assortment

10 ea. .001 — .0125 thick 5 ea. .015 — .030 thick

#### 100 SPACERS IN ALL

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THE DAHLSTROM TAP GUIDE virtually eliminates tap breakage-and saves those costly hours spent prying broken taps out of dies. Saves time, too. Just a few turns of the handle and the job

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Winds through continuously, with no backoff. Work is always dependably straight and square. Fasten it to a post or set it on top of a big job. This handy tapper comes equipped with 7 adaptors, 8.32 to \(\frac{1}{2}\)^2 but taps are not furnished. Spindle can be pulled out and used in a lathe, or used as tap extension for hard-to-get-at-places. 13" x 8" x 14", wt. 32 lbs. DAHLSTROM MFG. CO., 2506 WEST LARPENTEUR AVE., ST. PAUL 8, MINN. Send for Free Circular.



Also Makers of Dahlstrom Autostop and Tap Chuck

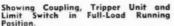
# Dahlstrom TAP GUIDE

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Transmission Type With Automatic Tripper Unit







Showing Coupling, Tripper Unit and Limit Switch in Shut-Down Position.

A Positive Safeguard for Both Motor and Driven Unit
The instant an overload develops the clutch in the Coupling releases; then the dual
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STANDARD Shockproof Mechanism used in most models, not as an optional "extra", but furnished regularly as another of the many STANDARD features. Absorbs shocks before they reach gearing, preventing damage due to sudden or forceful application of work pieces. Prolongs life of instrument and minimizes repairs.

Let Us Know Your Requirements



STANDARD GAGE CO., Inc., Poughkeepsie, N.Y.





## Lecture No. 17 ANALYZING FAILURE

by Jerome A. Raterman

President, The Monarch Machine Tool Co.

# WHY ARE SOME SALESMEN SUCCESSFUL, WHILE OTHERS MERELY GET BY?

Because selling costs are high in the machine tool industry, failures in selling are important. The most frequent cause of failure lies in the salesman himself; however, often the product, marketing conditions, sales policies, interfere with the salesman's most enthusiastic efforts. The conditions for or against failures are analyzed and described.

A NALYZING FAILURES is a tremendously important subject; just how important it is can best be shown by a few figures. First of all, the unit sales price of a machine tool is high. The average order amounts to about \$6,000, which means a single sales may range anywhere from \$1,000 to \$50,000 or more. Few industries offer equipment with such a high unit price.

Now, what is the average cost of mak-

ing one call? To arrive at this figure, let us assume that the productive work a salesman performs is largely concentrated in that part of his time which is spent actually interviewing the prospective customer. To help with these figures I enlisted the aid of both manufacturers selling direct and dealers. You must bear in mind that the sales engineer has car mileage, or railroad fare, meals, hotel, taxi, telegrams, and don't forget some overhead from the

#### THE CAMPBELL THAT-CUTS-THE COST OF CUTTING

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Separate Coolant Tank

For every cutting operation, there is one most economical method.

For many cutting operations. this is it.

It's the new CAMPBELL MODEL 223 WET ABRASIVE CUTTING MACHINE. It is the machine especially developed for faster cutting, easier operation, longer wheel life and . . .

#### LOWER FIRST COST

It is the most widely useful Campbell Abrasive Cutter ever built.

We suggest you send for BULLETIN Five Inch Wheel Flange DH-30 that gives you Automatic Work Stop complete information. **Automatic Coolant** Pump Operation Instantaneous DH-30 M Electro-Hydraulic Automatic Work Clamp MODEL 223

home office. Nor are calls made every day or week. Some allowance must be made for vacations, illnesses, sales meetings, trips to the factory to acquire additional knowledge, etc.

CAMPBELL MACHINE DIVISION

AMERICAN CHAIN & CABLE

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What, then, do we get when we take the total cost of keeping a man on the road for a year and divide it by the total number of calls he makes in that year? I found that the average number of calls per year was 425, and that overall sales expense, including salary and comissions, was in excess of \$16,000. That produces a figure of \$38 per call.

We also have kept some records on

the average length of a call and find it consumes 30 minutes. That is actual interviewing time, which makes the productive time of a sales engineer \$76 per hour.

I want to repeat those figures again. Average unit sales -\$6,000: average calls per year 425: average yearly expense of the sales engineer - over \$16,000; average length of call - 30 minutes; cost of call — \$38.

Now I am sure that all of us have sufficient respect for even the value of an inflated dollar to agree that the subject given me, Analyzing Failure, can be pretty important!

Under what conditions do we want to analyze sales failure or failure to get an order? For example, if six salesmen go after an order for an upright drill press, the five who don't make the sale have failed. Now if these same six salesmen knew absolutely that the XYZ Company should replace a lathe, but none of

them could get the order, all of them have failed.

CAMPBELL

Abrasive Cutters

d Nibbling Machin

Following this line of reasoning, I find myself in a very unhappy position of wondering whether all machine tool salesmen are failures to a degree. If they weren't, wouldn't every shop in America be strictly up-to-date?

Having been a salesman myself, I must do something to redeem our group—so let's say that a **low** degree of failure is the equivalent of a **high** degree of success!

Since the average sale in our industry amounts to \$6,000, no one enjoys losing



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Norgren Welding Regulators deliver oxygen and acetylene at correct pressure without "creep." They let you devote all your time to welding—instead of making frequent adjustments at the tanks in order to hold exactly the flame you want.

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an order. Therefore, it might be well to list the common reasons for losing orders. While not necessarily in the order of their importance, these reasons have to do with one or more of the following: (1) the product, (2) marketing conditions, (3) the administration of sales or, (4) the salesman. I have purposely mentioned the salesman last because I want to discuss the first three briefly and then comment more thoroughly on the last—the salesman.

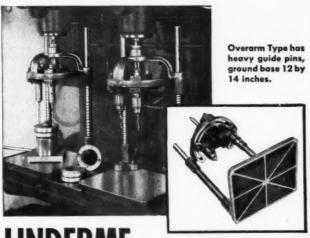
Let's go back to the first—the product. When a machine is first brought out, the men in charge of its design have in mind a certain market. As an example, let's take a small drill press. We know there is a market for this type of equipment in a home workshop. Of course, it must be built with price uppermost in mind. Long life, low maintenance cost, ease of operation, all are secondary to price.

At the other extreme, we have the high speed precision type of machine where accuracy and dependability are of primary consideration, and the selling price can be consistent with the quality involved.

Then, of course. we have the wide field that lies between these two. Buyers are not always infallible in their selection of machine tool equipment, and the salesman is treading on dangerous ground when he does not try to help the buyer select the type of equipment that is required. I am sure that it is better to lose an order than to sell a piece of equipment which is unsuitable for the job.

What of marketing conditions as a reason for losing an order? I can well remember the situation which existed back in 1932 shortly after we had brought out the Monarch-Keller lathe. With it we were able to show astounding savings in the glass mold industry. Many times we could divide by ten the time required to produce a bottle mold; but could we find buyers for the new machine?

Along with the machine tool industry in general, we were so desperately in need of business that in one instance we offered to put in a machine without any money down, accepting payment by just



LINDERME 2-Spindle Head

"increased production from 160 to 600 an hour"

This story is typical of the many applications of Linderme 2-spindle drill heads on long and short runs. You'll like these features: drills, taps—in metal, wood, plastics; quick, accurate adjustment, '1'" to 6" centers; two minute set-up on most drill presses in

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your shop; anti-friction bearings, rugged gearing, quality machining—and Linderme's low initial cost for Overarm or Sleeve Types—Twelve models, capacities up to %", available with G.M. Sleeves or Morse Tapers. Write for complete catalog.

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taking half of the savings. Even under those conditions we couldn't get the order because the depression had every body licked.

Another manufacturer told us that he would not install one of the new machines because it would put too many men out of work. "Wait until my business is better so I can absorb the men on other work," he said, "and then I will install the machine." He later lived up to his word.

These were unusual conditions, of course, but generally speaking, few man-

agements have the courage to buy capital equipment when the demand for their own product is not good.

We now come to the third reason for possible failure sales administration. This covers a very wide field, but I wish to give several points brief mention. A salesman could be doing a very excellent job, but if he is not properly backed up by the organization back home, his success can be very limited.

I would much prefer to discuss failure at the sales level, but the administration of sales ties in so closely that I cannot ignore its possible shortcomings.

First, proposals must be prompt and complete. We must all remember that while the salesman may have the opportunity of reviewing the machine with only one member of an organization, if there is much money involved, it is many times necessary for the pro-

posal to be reviewed by other people. A short quotation is, therefore, insufficient and every selling argument should be in the proposal.

Second, sales literature must be attractive. With the unit cost of machine tools so high, no manufacturer can justify cheap bulletins.

Third, a reputation for service must be established. No salesman can be expected to get an order if his firm has not taken a sufficiently active interest in the satisfactory performance of previous installations.



#### **CUT TOOL CONDITIONING COSTS**



Excel No. 6 Universal Cutter and Tool Grinder

Longitudinal table travel. 14"
Cross movement of saddle. 61/2"
Vertical movement of grinding wheel spindle. 7"

## EXCEL No. 6

Universal Cutter and Tool Grinder

695

.00 with motor and Standard Attachments--Pedestal Extra F.O.B. Benton Harbor

The Excel No. 6 is designed to accurately sharpen reamers and milling cutters of a wide variety of shapes and sizes and is also adaptable to cylindrical and internal grinding. Special attachments are available to convert the No. 6 to a multitude of uses in the tool room. Handy storage space for accessories in base.

Swing	work.							8	*	di	am	eter
Table	surface									.4"	X	24"
Floor	space									36"	×	48"

Write for free descriptive literature and name of nearest dealer.

Designed and Manufactured by

#### COVEL MANUFACTURING CO. DEPT. MT-59, BENTON HARBOR, MICHIGAN

Fourth, correspondence must be courteous. I believe that the art of letter writing started deteriorating with the invention of the telegraph and telephone. Few people any longer appear to have the knack of conveying in writing as favorable impressions as they create in conversation. In fact, many otherwise pleasant business relationships have been upset by a carelessly written letter. Any attempt, therefore, to improve correspondence is very much worth while.

Fifth, sales direction must be free of confusion. Sales policies of manufacturers and lealers should be thoroughly established and well understood by all salesmen.

Sixth, it is essential that advertising be coordinated with sales efforts. Don't discount the double-barreled effectiveness of interviewing a prospect as soon after he has read your advertising as possible.

Seventh, the sales quotas must be put within reasonable reach. These quotas must be in telligently set or revised so that they do not give the salesman either an unearned sense of achievement or an underserved feeling of defeat.

Eighth, territories or accounts should be of the proper size to provide a reliable measure of performance.

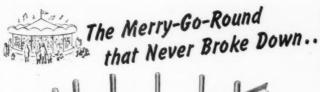
Ninth, the salesman should be properly selected, trained and compensated.

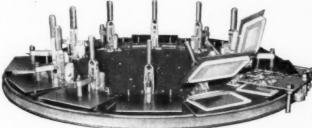
We now come to the fourth reason for losing an order—the salesman himself. Someone has said that a failure is a man who has made the same

mistake twice. Well, what does the salesman do or what doesn't he do that stands in the way of his success? What qualifications and virtues should he possess?

For the purpose of this analysis, I have divided the salesman's qualifications into three broad classifications — each absolutely necessary — each as important as the leg of a three-legged stool.

No two of these are enough — the stool would still fall over. He must have all three. These are: first, knowledge of the job; second, personality; and third, willingness to work.





No, this "Merry-go-round" never broke down, but it does break production bottlenecks every day, thanks to versatile De-Sta-Co Toggle Clamps!

It's a high-production assembly fixture for a new plastic ink pad. Here, the bottom of the case is being bonded to the body. Requirements: fast bonding cycle . . . positive clamping pressure for a perfect bond . . . precise alignment of work pieces for accurate assembly. Rapid toggle action, sure holding pressure, rugged durability and well-engineered design make De-Sta-Co No. 207U Toggle Clamps the tool designer's logical choice for this application.

And they're the logical choice, too, for holding parts during

Assembly

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prolem, there's a De-Sta-Co Toggle Clamp that's a "natural" to solve it. The complete line of more than 40 stationary and portable De-Sta-Co Toggle Clamps is shown in Clamp Catalog No. 49. Send for your copy today, and the name of our stocking representative nearest you.

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**DETROIT 3. MICHIGAN** 

Knowledge of the Job. It has been my good fortune in 30-odd years in the machine tool industry to have acquired a variety of experience. I have at one time or another been on both sides of the table in buying and selling machine tool equipment.

I know that every wide-awake executive, whatever his responsibilities, is constantly trying to increase his knowledge so that he may do a better job. He acquires this greater knowledge by experience, of course, but he also supplants it by reading, and by interviewing machine tool sales engineer:

It is the general policy of practically all companies these days to see callers promptly and to treat them courteously. While the discharge of this obligation is frequently done in the lobby in a matter of a minute or two, if you possess knowledge that can be of help to a particular customer. your chances of being invited into his office for a discussion of his problems are greatly improved.

To say that a machine tool sales engineer should know just about everything is no misstatement. How much he must know on any one occasion depends, of course, on the background and the need of the man who is to be interviewed.

Bill Jones may have a maintenance background, and to him the important thing is how the machine is made and how accessible various units are should trouble occur. Of course, machine tools should be sold on the basis

of their performance, but the salesman is in no position to tell Jones flatly what he should have or should not have.

Jim Brown's problem, on the other hand, may be pieces per hour and to him this overshadows every other thing.

Joe Smith may be a financial man and therefore interested in how soon his investment in a piece of equipment can be amortized. Or you may have to tackle the type of man who insists on making a detailed competitive analysis of specifications before placing an order.

In any one of these situations, you



must not only "know your stuff," you must know how and when to use your knowledge. To put it even more strongly, you cannot know too much if you know how and when to use your knowledge.

The kind of knowledge required to do a good sales job not only varies with the kind of man you are dealing with, but it also varies with the type of equipment you are selling. Your sales story on tool room equipment will be quite different from the one you use in selling production equipment. And a word of warning—never bluff and never lie! A prospective customer will think far more

of you if, when you don't know the answer to a problem, you admit it, but follow up with an offer to get the information for him.

Personality. What of the second requirement—a good personality?

Well, most of us, at one time or another, have come up against someone who appeared to be a better salesman than we were. It may have been a fellow salesman who had built up a better sales volume, or gotten more new customers, or earned a larger bonus. It may have been a competitor who had succeeded in selling a company we couldn't sell. It may even have been the customer himself who told us what a splendid salesman Jack Kelly was and how much he liked him.

Whoever it was, it made us wonder and perhaps worry a little. Was Kelly so much better than we were? Where did he get his reputation for being a supersalesman? How did he

manage to sell that lathe to old man Jones, the crusty son of a gun? Was it just a lucky break, or did Kelly really know a lot more about selling lathes than we did? Was it, by any chance, that he had more "personality"—more of that elusive "something" which combines aggressiveness, self-confidence and enthusiasm with an uncanny ability to put the pen in the prospect's hand at just the right moment?

How to acquire more "personality" for ourselves we didn't know—and to this day we don't know. But we're not so discouraged as we once were, because



the more we have looked around, the more we have found that no two sales managers are in complete agreement either on a formula for acquiring that sales "it."

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There have been many ideas advanced on how to measure "personality." These have ranged all the way from studies of handwriting, of bumps on the head and of stars in the heavens, to the theory that light-haired men make better salesmen than those with dark hair.

To my way of thinking, no one's personality has everything-not even Jack

Kelly's. All of us have something to offer. The trick is to study the "per-sonality" we have, see what improvements we can make in it and what desirable traits we can add. I sincerely doubt that anyone's personality can be gauged by the slant of his handwriting, the shape of his head or the temperature or pressure of his handshake.

It is possible, of course, to agree on some general attributes of a good personality. Stability, for example, is certainly a desirable quality in a salesman. You won't make friends and get orders if you are disposed to "fly off the handle" too easily.

We have already mentioned aggressiveness, but I want to mention it again because every sales job calls for some aggressiveness. In high pressure work, you probably can't have too much aggressiveness. In selling machine tools, however, we are all aware of situations in which too much

aggressiveness would lose a sale rather than gain it.

We've also mentioned self-confidence as a desirable personal trait. A self-conscious chap who is afraid to face a buyer or who feels inferior to every person he meets, is certainly going to make a poor salesman. But a salesman who is well adjusted to his work, to his family life and to contacts with others generally cannot help but radiate a contagious self-confidence.

Finally, we all like the extrovertthe man of action, the fellow who doesn't

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Staples Carbide-Tipped, Shell Type Expansion Reamer REAMED 112,175 CAST IRON PULLEY SHAFT HOLES OVER PERIOD OF 11/2

YEARS — WITHOUT RE-PLACEMENT — EXPANDED ONLY!\*

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This Staples Carbide-Tipped Shell Type Expansion Reamer has an unusually wide variety of applications. Tool is expanded by driving shell up tapered arbor. Uniform parallel expansion the full flute length is maintained, permitting easy adjustment to .0001". As the shell is a standard item, a new tool is obtained simply by replacing the worn shell.

Many design variations of this tool are possible, including use of two shells of different diameters for step reaming. If you are interested in obtaining maximum economy from your reaming operations, by all means investigate this outstanding Staples development.

\* Actual tool performance report on turret lathe operation submitted by a large midwest manufacturer.

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Complete tool catalog sent on request.

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A COMPLETE LINE OF SINGLE AND MULTIPLE POINT CUTTING TOOLS EXPANSION REAMERS • FORM TOOLS • CENTERS • MASONRY DRILLS • SPECIAL TOOLS

worry too much or get too easily upset. His enthusiasm for his job and his product is well-nigh irresistable. Call it "personality" if you will, the fact is he has the knack of making others want to give him their business. The important thing about all these traits that go to make up "personality" is that you can develop them, not to imitate Jack Kelly, but to improve your own stability, aggressiveness and self-confidence.

Willingness to Work. Now let's look over this last qualification of a good salesman—willingness to work. After all, there is no substitute for this homespun virtue.

Earlier in this talk, I mentioned an average of 425 calls per year for a machine tool salesman. I think it is a serious matter because I know in my own mind that there is a relationship between calls and orders. If our salesmen made more effective calls, they would get more orders. I think we can all admit that the past eight years have been the golden era for the sales-man in any business. Unfortunately there has been a let-down in too many places, including our own industry.

To increase the number of calls per year will require better planning on the part of the salesman himself. The boss can't do this job for him. The companies who refuse to see salesmen except between the hours of 10:00 and 3:00 are the exception rather than the rule, and any salesman who knows his territory well can easily plan an eight-hour day. If

he wants to make his commission check larger, he can even get up a little earlier and be at the point of his first call by 8:00 A.M. If he wants to sacrifice a little on his golf game, he can even keep busy until 5:00 P.M.

Too many salesmen have been kept so busy answering inquiries that they haven't put in the extra effort required to call on the smokestacks, make new friends and new customers, and ring up a few good-will calls on previous installations.

I frequently tell our men that a goodwill call is worth \$25.00 and I thoroughly



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believe it. If a salesman will do no more than call on the customer and say, "How is that 20-inch lathe going that we installed three months ago?" he has accomplished something. If the answer is one of hearty approval and all the salesman has left to offer is the remark, "If I can help you at any time, let me know," he has made an impression that will go a long way toward securing the next order. These good-will calls are insurance for the next year's business. Make all of them that you can.

I so often hear salesmen say, "I know

of every competitive machine in my territory," that I have a stock answer for it. When I leave out the prohibited adjectives and nouns, however, it is meaningless! Suffice it to say, I don't believe him.

We, as manufacturers, and our dealers as well, have served certain customers over so many years that we get inquiries and orders from them without competitive quotations. But our competitors have done the same thing. If you salesmen would like something to worry about, just remember that there are orders placed which you know nothing whatever about! If you lose any sleep at all, I hope it is early in the morning when you are driving to see that new customer by 8:30!

I have a firm belief that anyone can be successful at anything if he has sufficient will power and perseverance. If a man really wants success, it is his for hard

work. The only question is how soon — and this is dependent on his ability. A man of lesser ability need work only a little harder or a little longer.

How much sacrifice are you willing to make for success? Are you willing to work harder and longer? Are you willing to put in some effort beyond eight hours per day? Are you willing to study your sales literature at night — instead of enjoying pleasant daydreams — devote the time to building up sound sales arguments for tomorrow's calls? These things are the price of success!



The most important reason for losing the order from my point of view today is the salesman himself. It is most important to me because every salesman can do something about it, something constructive. You may not be able to inspire the engineering department to invent some machine so new, so startling, that customers will fight to get it. You may not be able to inspire your shop to build their machine tools so well that customers never have trouble with them. You may not be able to induce your sales manager to adopt clean-cut unequivocal sales policies. But you can do something about the

salesman — your-

You can acquire the habit of dispassionately reviewing each interview and each order, whether you got it or someone else did, but especially if you lost it, so as to determine what you did that was wrong and what you did that was right. The whole point and purpose of this course, as I see it, is to induce our industry to plan its selling more carefully and prosecute its sales more vigorously. To a large extent, this comes right down to you.

Before you reach for the customer's door knob you must know what you are going to say to him; not in precise words, but in the points you are going to make. Let me suggest that it is equally important after the interview to review what you said and what the customer said and to analyze the interview dispassionately, as if you had been an interested spectator instead of a participant.

Especially after a lost order, review the transaction from the beginning. Do not merely ascribe your loss of the order to the customer's unfortunate traits — we do not deal with perfect customers and never will — and we can't do anything about it. What could you have done that you did not do? What could you have said that you didn't think of? What did you say that could have been better said in other words?

The point of all this is to improve your sales technique. No one else can do this as effectively as you can do it. From the omissions and the errors you will build

a better sales technique and have fewer lost orders to analyze.

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There is always something to be salvaged, something to be gained, when an order is lost, even if it is no more than leaving the impression of good sportsmanship. At least nothing can be gained by bringing down the wrath of the buyer. Obviously, he bought what he wanted and from whom he wanted.

This is the time to take intimate counsel with yourself, honestly, of course, and ask, "Why didn't I get the order?" Did I know my product? Did I present it properly? Have I taken good care of previous installations? Did I lose my temper, bore the customer, or say the wrong thing? Did I ever call on the prospect previous to receiving his inquiry? Did I call on the proper man, or slight anyone in the organization?

Have I made a habit of starting so late in the morning that I have not had time for good-will calls or have I quit too early in the afternoon? Have I planned my work well, so I could make the maximum number of calls? Did I really study my sales literature so I thoroughly understood it? Did I write the home office about anything questionable? Did I have to hunt through my brief case for information that should have been on the tip of my tongue? Was I too proud or too indifferent to call for more experienced help?

When you lose an order, you should not only ask yourself these questions and more, but you should also try to answer them and above all, try to learn by your mistakes and misfortune.

Make out a good lost-order report. If it is too embarrassing, make out two—one for your boss and one—the real one—for yourself. As a general rule, a lost-order report has to be read by an expert to get the full interpretation and even then questions must many times be asked.

Self-preservation seems to be one of the first rights of man, but I believe that far too often an alibi is substituted for the real reason and conditions beyond the control of the salesman are given too much emphasis. Remember, the buyer doesn't want to make you mad; he doesn't even want to hurt your feelings. Nine chances out of ten, he will give you a reason for losing the order that totally absolves you, but only the poor salesman will kid himself — or try to kid the boss — over why he lost the business! End of Lecture No. 17.



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Triple-Chip vs. Alternate Method. (SAWING SAE 1020, 3%" O. D.)

Method cut ell
1728 pieces before blade needed resharpening.
Tasil tool cost per
cut of free, exclusive
original ce serbase
plus cost of resize rp ening —
\$.0029. Total
tool cost for
100,000 pieces
—\$290.00.

Triple-Chip

Alternate method cut off 260 pieces for cost of blade. Blade "done fer"; no resharpening possible. Total tool cost per cut off piece, exclusive of labor and overhead—\$.0174. Total tool cost per 100,000 pieces—\$1740.00.

Faster feeds and speeds are one answer to increasing production and decreasing costs. Lower tool costs are equally important. Use of the Triple-Chip Method insures that the cut off ends shall be

square, clean with milled finish, and accurate to length, eliminating facing or squaring operations. In addition, the narrow kerf of the Triple-Chip blade reduces stock waste to a minimum. Take advantage of the Motch & Merryweather Triple-Chip Method. It increases production...lowers tool costs... saves time and material.

Write us for complete information.

The Model O-A, with capacity to 4" round or square, is one of a complete range of circular sawing machines for stock from ¼" to 16½" diameter. Standard or his speed models of all sizes are available for sawing either ferrous or non-ferrous metals.

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# Letter from England



Written for the MACHINE and TOOL BLUE BOOK by Robert Hutcheson, Editor of MACHINE SHOP MAGAZINE, London, England.



Britain's motor industry is now facing several difficulties. This industry has made substantial contributions to our export drive but overseas markets are becoming more difficult.

The Coventry works of the Standard Motor Co., where Ferguson farm tractors are assembled, went on to a three-day week. Production has been reduced by reason of shortage of sterling in many parts of the world, and the reduced work ing week was instituted as a measure preferable to that of dismissing workers who would be redundant if a longer week were worked. Wage agreements that now operate in the engineering industry guaranteed the employees a weekly wage of £5, or more according to grade, for the three days week. Under arrangements that existed a few years ago workers would have been paid only for the time actually worked.

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However, it seemed to be impossible to carry on under these conditions and two or three weeks later 1,700 workers were declared redundant.

During January 9,700 tractors to the value of £2,500,000 (\$10,000,000) were exported. Tractor manufacturers regard the overseas marketing difficulties as being of a temporary nature only. David Brown Tractors of Huddersfield have 2,000 employees, 75 per cent of whom are engaged

on agricultural and industrial tractor production. Fords are building 200 tractors daily and exporting 70 per cent of them. In spite of the present set back the huge Nuffield organization is to embark on tractor manufacture.

The conditions influencing the overseas sale of tractors are also impinging on the automobile market. January export figures were lower than those of December but the commercial vehicle figures were up -7,279 in December and 7,845 in January.

As a result of the narrowing of the foreign markets for automobiles the Minister of Supply has agreed to consider increasing the allocation of cars for the home market. At present this is 25 per cent of output; according to Sir John Black, managing director of the Standard Motor Co., home market allocation could be increased to 40 per cent under prevailing conditions.

A new venture in car making is that of the Austin Motor Co. They are opening a works in South Wales, to be staffed by incapacitated ex-miners, for the manufacture of toy cars. These models will be made only for export and the range may include copies of the "A90 Atlantic" a vehicle that is built for your markets.

In connection with the Austin activities a point of interest is that a racing team

has just left here for Indianapolis to attempt new track records with a A90 car.

A motor show has been held in Geneva, Switzerland, and it is claimed to be the largest motor exhibition ever held in Europe. In the tourist class of exhibits British cars represented 25 of the 74 makes that were displayed. The highest priced car shown was made by the famous British firm of Rolls-Royce; it was the Silver Wraith Mulliner Sedanca priced at over \$18,400. The British vehicles were much admired, and the modern lines of the British cars aroused favourable comment.

Steel continues in the news. The industry is doing well, but nationalisation is going ahead. However, in spite of the high output home industries cannot get enough of it to satisfy their needs. Aluminum and its alloys are finding many applications where previously steel or cast iron was specified.

In February production was at the rate of 16,175,000 tons per year according to the Iron and Steel Federation.

A scheme is on foot to give a wider training than hitherto to boys entering the industry. Apprentices will now receive training in several departments of a works, and they may work in several plants. In this way they will gain a wide experience and have the opportunity of following the particular trade for which they have most aptitude and liking.

In some directions an immediate reduction in the steel subsidy is anticipated; engineering firms using large quantities of steel fear that increases in price will occur and that they will be forced to pass these increases on to their customers with consequent disadvantages in overseas markets.

Steel is a major material of construction in the motor car industry. The Nuffield organization are concerned about the possible increase in steel prices and say that they will do everything possible to avoid price increases for their cars in overseas markets.

The President of the Board of Trade, Mr.



Discover for yourself the many ways in which "Grip-Master," the original screwless drill-press vise, can cut production and tooling costs. The secret lies in "Grip - Master's" instantaneous, effortless setting plus a patented "Circle Grip," positive locking

> mechanism. Wide clearance between bars permits clear-through drilling, built-in parallels save leveling time. Write for details.

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DO YOU TIME YOUR CUT-OFF OPERATIONS

IN HOURS . . . OR MINUTES

OR SECONDS ?

If its a matter of hours . . . or even minutes . . . here's the practical way to cut it to seconds . . . and to cut costs at the same time!

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Abrasive Cutting! Regardless of the material you cut . . . or whether the operation is in the toolroom, stockroom or on the production line . . . the abrasive method means cutting time is actually measured in seconds . . . means you cut to size within a few thousandths . . . means a finished surface that generally requires no further machining. Important facts that add up to just one thing . . reduced costs!

#### THE WHEEL

In our long experience as specialists in abrasive cutting, we have developed a wide range of wheels (Rubber Bonded and Resinoid Bonded) in a scale of sizes and properties, each with specific characteristics. Selecting the right wheel best suited to meet the requirements of your job is an important part of our business.

Investigation costs nothing . . . and it may pay you well to investigate. Give us full particulars of your cutting operation . . . we will gladly make recommendations that will assure better results, at lower costs.



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Here are the complete facts on Abrasive Cutting and Allison Wheels . . . yours for the asking. Send for your copies today.

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During 1948 just over half the world's new shipping tonnage was launched from yards in Britain and Northern Ireland. A total number of 872 ships having a combined tonnage of 2,309,743 were launched and of these 342 vessels with a tonnage of 1,176,342 were launched in this country. Sixteen countries are reviewed in Lloyd's Register Annual Summary of Merchantile Shipbuilding, according to which Sweden ranked second to Britain for shipbuilding output.

Sir Alan Cobham, a well known figure in the British aviation world, has long been an advocate of the refuelling of aircraft in flight. He is managing director of Flight Refuelling Ltd., the firm that developed the refuelling system which enabled the B.50 bomber to make its recent non-stop flight round the world. Sir Alan is of the opinion that if the system was adopted for our trans-Atlantic commercial 'planes the losses of the airway companies could be converted into profits.

The Ministry of Civil Aviation had tests carried out. These were completed early last summer and it is expected that  $\alpha$  report on them will be issued in the very near future.

One of Britain's most important steps in its development of atomic energy is the production in this country for the first time of plutonium. This has been obtained from uranium at the Ministry of Supply atomic research station at Harwell.

The amount of plutonium produced is small—it is necessarily small because of the low operational power of the graphite low energy pile that is being employed.

Harwell is somewhat in the nature of an experimental plant or perhaps a pilot plant for the full-scale plutonium production plant



#### LET ENCO'S VERSATILITY CUT YOUR COSTS



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Photo No. 1
fa'' square tool bit mounted in Model
41/2-5 forcet used for facing cut."



Photo No. 2 The same tool used for brandface faging morely by indexing bursel are position on 187



Photo No. 3 Same tool good for inside chamfer morely by indexing both two positions or 60.

The above photos illustrate the flexibility of 12 position indexing whereby each tool may be used in three different working positions.

	SPECIFICA	TIONS OF A	FEW OF MA	NY ENCO TL	JRRETS	
Model No.	HD-2	6-S	41/2 - R	41/2-8	31/2 - R	31/2-8
Suggested Lathe Size	16" to 24"	14" to 20"	15" to 19"	13" to 16"	12" to 15"	10" to 13"
Tool Block Size	61/2" sq.	6" sq.	41/2" sq.	41/2" sq.	31/2" sq.	31/2" sq.
Solid Tool Capacity	11/2"	11/4"	1"	3/4"	7/8"	1/2"
Price	\$138.50	103.50	66.50	53.50	46.00	36.75

WRITE FOR CATALOGUE NO. 48 WHICH SHOWS TYPICAL APPLICATION PHOTOS OF MANY OF ENCO'S 35 MODELS ON ACTUAL JOBS.

Also Mfrs. of Enco Hexturret Bed Turrets and Tailstock Turrets for 9" to 18" Lathes.

ENCO MANUFACTURING COMPANY Dept. 259, 4524 Fullerton Ave., Chicago 39, III.

#### NEW GRAHAM CENTERING VISE

With left and right hand screw, both jaws move toward center, centering work regardless of size variations. This gives double-fast action. Can be used with interchangeable V jaws. Handle fits either end.



Has exclusive ADJUSTABLE ZERO POINTER to assure coincidence with zero on base. Complete 360° rotation. Positive 2-point lock in any position. Screw never protrudes under work, cannot be drilled into. Usable with special jaws and jig attachments described below. Removable from base for use plain.

#### JIG ATTACHMENT VISE

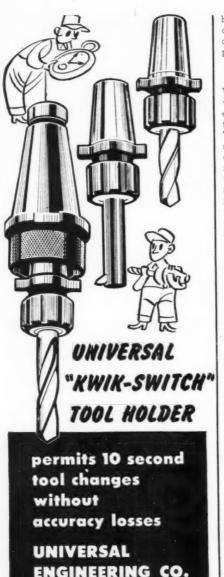
Usable plain. Also drilled and tapped for stops, guides, bushing plates and other attachments making it a Multi-purpose jig or fixture serving many repeat-operation needs saving the cost of making special devices.

ALSO "ADJUSTANGLE"-KNURL TOOL FITTING TURRET

Request Illustrated Price Bulletin 44

Graham Mfg. Co. East Greenwich, R. I.





FRANKENMUTH 10, MICH.

being set up at Sellafield, Cumberland at a cost of  $\pounds 8,000,000$  (\$32,000,000). The continuous extraction of plutonium is expected.

In South Wales The Steel Company of Wales is engaged in developments that will cost £60,000,000 (\$240,000,000). Of this amount £6,500,000 (\$26,000,000) will be in the form of dollar aid from your country. The plant being installed includes hot strip mills at Port Talbot and Margam and cold reduction mills at Llanelly and Swansea. Some of the plant from Pittsburg manufacturers has now been installed. This scheme represents a major step in the production of British sheet steel and tin plate and it is anticipated that by the middle of 1951 the Port Talbot plant will be in full production with an output of one million tons of steel per annum.

Work Loader. The Landis Tool No. 1 vibrating work loader will feed standard size cylindrical work pieces from .112" to ½" in diameter and up to 1" long. Engineering data, illustrations, prices. Landis Tool Co., Dept. BB., Waynesboro, Pa.

Precision Lathe TRB S-56 by Sheldon fulfills today's dual needs for a lathe that will operate efficiently with both standard tools at normal speeds and feeds and with the recently developed cutting materials and tools that require much extra power and speed. 4 pages. Illustrations, specifications, accessories. Sheldon Machine Co., Dept. BB. 4258 N. Knox Ave., Chicago 41, Ill.



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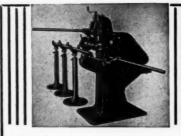
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- Faster!
- Longer Tool Life!
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The laps are sold in sets of six in the following sizes: '\s''. ' can be had in lots twelve.

new lap with outstanding features. Sleeves are self-aligning when inserted in hole for lapping . . . thus performing as if equipped with a universal joint. Wearing surfaces are full length of the sleeves. Self expanding lap also used for multiple lapping. Write today for full details.

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#### TUBE & PIPE Steen High-Speed

CUTTING tube pipe. and cut-off machines embody column column cut-off machines embody unique design and rigid construction features to greatly step up cut-off operations. Available in three sizes to cut diameters  $\frac{1}{6}$ " to 3";  $\frac{1}{6}$ " to 6"; 3" to 12".

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Continental Machine Co. 1954 Maud Ave. Chicago 14, IIL

For feeding strip and wire coil stock to presses. Coil capacity 300 to 500 lbs. Outside ring dia., 28" to 36". Height of reel, 36". Wheel automatically adjusts parts to suit inside diameter of coils from 11" to 20". Arm allows for quick conversion to horizontal or vertical position and adjusts height of reel.



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- Zero Precision Taper Roller Bearings most accurate made.
- 2. 1%" hole thru spindle—1" collet capacity.
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- 4. Spindle run out accuracy within .0005.
- Heavier carriage, wider bearing on bed.
- 56" Bed held within .0005" of parallel alignment.
- Reinforced steel cabinet bench with plate top.
- 8. Large double wall apron.
- Standard big lathe controls.
- 10. Front Switch.
- 11. 8-speed, v-belt, enclosed underneath motor drive.

# The more you compare..

Unless you have kept up-to-the-minute on the postwar developments in the new lighter, less inexpensive lathe field, you will be surprised at the tremendous advances in accuracy, capacity, speed, stamina and earning power that have been made in this field.

You will also find, that the more you compare these new lathes, the more you will determine on

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Manufacturers of Sheldon Precision Lathes . Milling Machines . Shapers 4222 N. KNOX AVENUE . CHICAGO 41, ILLINOIS, U. S. A.

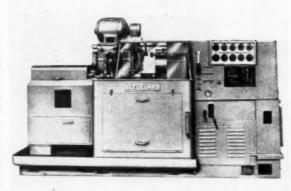


# NEW CLEVELAND DIALMATIC FEATURES BASIC DESIGN CHANGES

Among the important refinements to the basic design of the new "Dialmatic" Cleveland, Model AB 2 1/2" Single Spindle Automatic Screw Machine manufactured by The Cleveland Automatic Machine Company, is included a re-design of the main guarding to permit easy access to the tooling, and to facilitate chip removal. The front panel in the main guard can be quickly lowered, forming a chute, so that chips can be raked out of the pan directly into a container for quick disposal. The extensive use of Plexiglas in the front and rear

guards also greatly increase visibility in the tooling area. Plexiglas panels are hinged so that they can be easily raised out of the way of the operator or setup man.

An outstanding feature of the "Dialmatic" is the electric feed drive which makes independent and infinitely variable forward and return tool feeds possible, without cam changes, for each



of the five tool positions in the tool turret. Forward and return feed settings are made by positioning 10 dialed rheostats on the control panel. Quick-disconnect plugs are now used to link all electric connections leading to and from the feed drive system.

The electric control panel has been re-designed to make controls more accessible for maintenance and to pro-



The RPM's stay up while grinding... not only when the grinder runs idle.

It is an established fact that surface speeds must stay up to approximately a mile a minute if you want to grind — not just rub. The speed of Kipp air grinders drops but slightly when put to work. That means better work—longer wheel life.

Buy Kipp air tools for best results, lower prices.



vide signal lights which aid the operator in running the machine. Two of these lights show the direction of rotation of the spindle. Two others show whether the spindle is in fast or slow drive, and the remaining two lights indicate whether machine is in feed or rapid traverse.

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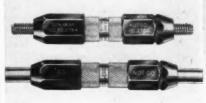
The change gear cover has been modified so that it can be removed by simply unscrewing four knobs. The time required to change spindle gears has been further reduced by supplying Ushaped washers which eliminate the necessity of removing the nuts which hold the gears in place.

For complete operational data and specifications, on the Model AB "Dialmatic," write the manufacturer:

The Cleveland Automatic Machine Co. Dept. BB Cincinnati 12, Ohio

#### P & W REVERSIBLE PLUG GAGES

A new line of plug gages claimed to reduce gaging costs and give twice the wear life, has been announced by Pratt & Whitney, Division Niles-Bement-Pond Company. As their name implies, Pratt & Whitney Reversible Plug Gages have reversible gaging members. When a member has worn below size, it can be quickly replaced with the other end simply by unscrewing the colored locking nut (Green for Go and Red for Not Go), reversing the gaging member in the bushing, and screwing the locking nut on the handle.



P&W Reversible Plug Gages are regularly furnished as cylindrical or thread plugs. Cylindrical members are made to American Gage Design Standard in sizes from .030" to .510", in steel, chromium plate and carbide. Thread gage members are furnished to X tolerance for checking NC and NF threads in sizes from 0 to ½". Other thread forms will be furnished on order.

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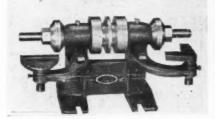
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All cylindrical and thread members are hardened, ground and precision lapped to close tolerances. The P&W "Pilot Feature" may be added to cylindrical members above .240" in diameter to facilitate easy entry into close tolerance holes. Convolution and chip grooves are provided on thread members in accordance with standard practice. For complete information, write:

Pratt & Whitney, Dept. BB Division Niles-Bement-Pond Co. West Hartford 1, Conn.

#### CLIZBE HEAVY DUTY BENCH GRINDER

A new, heavy duty, all purpose grinder has recently been placed on the market by Clizbe Brothers Manufacturing Co., makers of emery wheel and utility grinders. The new unit,



listed as the "Super Grinder" is stated to be sturdy enough to stand up under hard usage. The arbor is 15½" long x 7½" diameter, in bearings ¾" at end. The grinder will take wheels up to 8" diameter x 1½" face, with ¾" arbor holes. The unit is equipped with two combination V-flat pulleys, 3-1/16" in diameter x 1½" face, loose pulley locks for double V-drive; long oilite bronze bearings are provided, with an oil well around each. Total shipping weight is 25 pounds. For complete specifications, write:

Clizbe Brothers Mfg. Co., Dept. BB Plymouth, Indiana



 It gives you price and specification data on Economy Drill-Jig Bushings — all A. S. A. standard types and sizes for immediate delivery.
 Write for your copy today.

> Also quickly available: new gages and gages salvaged by hard chromium plating.



1829 S. 68th St., Milwaukee 14, Wis.

#### NEW COVEL 8" x 24" CAPACITY SURFACE GRINDER

A new, hydraulically operated Surface Grinder, equipped with a 12" diameter grinding wheel, and with a work capacity of 8" x 24", has recently been introduced by the Covel Manufacturing Co. The new No. 35 unit has the same wet grinding, wheel truing, dust exhaust and high speed attachments which are found in the Covel No. 20 Surface Grinder, but is a larger capacity machine. The manufactturers state that any 8" x 24" electric or permanent magnet chuck can be used.

The new machine is a horizontal. hydraulic reciprocating unit, grindwith the periphery of its 12" diameter, 3/4" face, wheel. The longitudinal grinding capacity is 24", transverse, 8" and vertical, 11". The longitudinal table travel is 27"; transverse travel is 9".

The table's working surface size is 8" x 24"; it is provided with three 9/16"



wide T-slots. The overall size of the table is 1178'' x 4978''; it stands 39''

## HERCULES \*O BENCH SHEAR and ROD CUTTER

- SHEARS SHEET AND BAR STOCK UP TO 14" THICK, ANY LENGTH AND WIDTH
- CUTS RODS SQUARE. WITHOUT BURRS, UP TO 1/4" DIAMETER
- NOTCHES OUT TEM-PLATES AND OTHER ODD SHAPES
- CUTS CIRCLES FROM 11/2" TO 10" DIAM-ETER
- AUTOMATICALLY **EJECTS CUT RODS**

SOME TERRITORIES OPEN FOR MFG. REPRESENTATIVES



EXTRA ATTACHMENTS

AUTOMATIC EJECTOR



NIBBLER

CIRCLE



A general purpose tool for proa general purpose tool for pro-duction purposes as well as for making samples & templates. Never leaves burrs. Shear Blades are of high grade tool steel. Made of aluminum alloy, 3 times as durable as cast iron: Cuts rods with one stroke. Weighs 6 pounds. If Your Dealer Cannot Supply Weighs 6

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MANUFACTURERS PRODUCTS CREST AVE., EAST HAVEN, CONN.

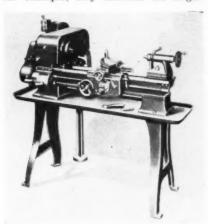
from the floor. The interchangeable quill type spindle is provided with three speeds—1750, 2200, and 2600 r.p.m. The grinding wheel motor is a 2 h.p. ball bearing unit, either 1750 or 1425 r.p.m. The hydraulic pump is driven by a separate 1 h.p., totally enclosed ball bearing motor, either 1150 or 1425 r.p.m.

For complete specifications and operational information, write:

Covel Manufacturing Co., Dept. BB Benton Harbor, Mich.

# LOGAN INTRODUCES NEW 11" SWING

The new 11" swing lathes recently introduced by Logan Engineering Co. are causing widespread interest throughout industry. With a 1" collet capacity for draw-in collets, and center distances of 24" and 36", the new lathes have greater capacity than previous Logan models. The overall construction is also heavier. The new 11" lathes incorporate all the advanced design features which have made Logan 9" and 10" lathes so successful. With a heavier headstock, for example, they combine the Logan



pre-loaded ball-bearing spindle mounting which assures sustained accuracy at all spindle speeds from 45 to 1500 r.p.m. Total spindle runout is held to within .0005", twelve inches from the





There is a M-T Fixture Clamp and Fixture Component to meet your most exacting requirements. Immediate delivery.

Write for catalog and price list.

Morton Machine Works
2422 Wolcott Detroit 20, Mich.



Easily attached to any press.
Completely automatic in operation.
Presses produce 100% of operating time

Precision built for consistent and Precision built for consistent and accurate feeding and long life.

Simple design—easy to maintain. Standard models from 3" to 12" wide with up to 18" advance in both single and double feed models. Larger feeds and longer advances can be made to your specifications.

We also manufacture a complete line of Stock Reels Stock Straighteners. Wire Straighteners. Wire Straighteners. Wire today for Ulters.

literature quotation forms. La Bahn Ma-chinery and Company. Mfg. Lincoln Metuchen.

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ROLL FEEDS . STOCK REELS . SCRAP CUTTERS . STOCK STRAIGHTENERS

MACHINE & MFG. CO. METUCHEN . NEW JERSEY

THIS BURKE BENCH MILLER

COSTS only



It's the little Miller with the big reputation for accurate work. For production, tool rooms, schools, hobbyists. Send for catalogue of hand and power feed models.

# The BURKE MACHINE TOOL CO.

A Division of U. S. Burke Machine Tool Co. 20 East 72nd St. Cincinnati 16. Ohio bearing. The two V-ways and two flat ways of the heavier, more rugged bed are precision ground to a tolerance of .0005" along the lineal capacity of the lathe. Self-lubricating bronze bearings protect against wear at points where bearings are not ordinarily used.

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Full quick change gear equipment provides instant selection of 48 threads and feeds. The new models are available in cabinet and bench types as well as the conventional floor types.

Full details and a new. illustrated folder may be obtained upon request.

Logan Engineering Co., Dept. BB 4901 W. Lawrence Ave. Chicago 30, Ill.

#### USEFUL GRINDER-BUFFER HAS WIDE APPLICATION

The Baldor Electric Company announces the development of their 60 series grinder-buffer. This unit is powered with a 1/4 h.p., 3400 r.p.m. capacitor start, capacitor run motor which, according to the manufacturer, will not burn out even though it be repeatedly overloaded.



Standard equipment includes 6" x 5/8" x 1/2" grinding wheel on the left hand side and a 6" x 5%" x 1/2" wire brush on the right hand side. Wide clearance between the wheels and the motor frame permits the grinding or cleaning of large or odd-shaped pieces. Ball bearings are of the sealed-for-life type which require no lubrication. For further information, write the manufacturer for bulletin No. 321-D.

Baldor Electric Co., Dept. BB 4351-67 Duncan Ave.

St. Louis 10, Mo.

#### MERZ SURFACE COMPARATOR ASSURES ACCURATE METER READINGS

A new electronic comparator, which provides rapid and simple accurate surface control of machined parts, is announced by the Merz Engineering Co. This new device, the Pico Surface Comparator, checks surfaces electronically against an approved sample, and assures instant, accurate meter readings. Since it is entirely self-contained and portable, it can be used anywhere on the production line, without special accessory equipment or skilled operators. Its overall dimensions are 11" x 9" x 7". The unit weighs approximately 15 pounds, and operates from any 110-volt, 60-cycle outlet.

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The Merz Pico Comparator consists of the meter, exploring head and adapter. Readings can be taken in 5 seconds, simply by pressing the head against the surface being checked, touching the actuating button and comparing the meter reading against the master reading. The unit is provided with a knife-edge meter pointer, which

reads only one point on the scale, thus eliminating calculations.

Another feature is the instrument's area of exploration, which is some 500,000 times greater than with tracer methods according to its designers.



Complete information on the Merz Pico Surface Comparator is available. Merz Engineering Co., Dept. BB Indianapolis, Ind.



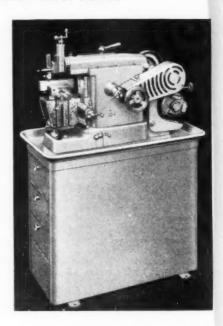
# SOUTH BEND 7" PRECISION BENCH SHAPER

A new 7" Bench Shaper for toolroom and industrial use is announced by the South Bend Lathe Works. Several years of research have resulted in a compact unit which is precision engineered and sturdily constructed. This new shaper is said to be capable of the most exacting work on parts

within its capacity.

The main castings for the shaper are made of close-grained semi-steel. The ram and table slides are milled and hand-scraped for precision fit and are provided with adjustable gibs. The bull gear shaft and countershaft revolve in Oilite bearings. All gears are machine cut from steel or gear fibre for smooth operation. Backlash is held to a minimum by fitting parts to extremely close tolerances.

The ram is 18" long and has ample bearing rigidity in all positions. Length of the ram stroke (0" to 7") is adjusted by shifting the rocker arm shoe until the witness mark corresponds with the desired figure on the rocker arm. This adjustment is made with the crank shoe at the extreme top of its stroke. A large handwheel aids in making the adjustment. Cutting speed is variable from 3 to 114 feet per minute. Stroke rates of 42, 75, 120, and 195 per minute are obtained by shifting a V-belt on 4-step cone pulleys. A quick-acting belt tension release facilitates belt changes. Cutting position of tool is adjusted by releasing the rocker arm assembly lock on the ram.



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The tool head has 3" feed, swivels to any angle, and has a positive lock. A swivel clapper box allows tool clearance adjustments to be made. A clear cut graduated collar on the feed screw reads in thousandths of an inch. The tool post provided takes tools with shanks 38" x 78".

#### REAL HELPING HAND

It's a help that die makers, tool makers, machinery builders and general machinists have long soughta more accurate and surprisingly faster way of trans-

ferring blind screw holes.

The Heimann Transfer Screw Set is a self-contained, complete tool. No wrenches or pliers are necessary. Made in 3" to 1" diameters. Send for price list.

HEIMANN MFG. CO.

332 Lincoln Ave.

Urbana, Ohio

The work table is 5-7/16" x 5" x 6" deep. It is slotted on top and sides, and has holes for attaching the vise and special work clamps in various positions. The table is equipped with an adjustable outboard support to the base. Reversible power cross-feeds for the table range from .002" to .016" per ram stroke. A graduated plate indicates the feed. Horizontal table travel is 9½", vertical travel is 5", and maximum distance from table to ram is 5½". The vise has a graduated base and swivels to any angle. Vise jaws are 4" wide, 1" deep and open to 4"

A 1/3 h.p., 1725 r.p.m. motor is required for power and is mounted on a cradle attached to the back of the shaper. For complete information, write:

South Bend Lathe Works, Dept. BB 384 East Madison St. South Bend 22, Ind.

# NEW EJECTOR TOOL INSERT GRINDING

Super Tool Company, manufacturers of Ejector Type Tools, are now offering a fixture for sharpening and grinding chip breakers on their inserts. The new

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device is described as the Super Ejector Tool Insert Grinding Fixture. It provides ample clearance for grinding any insert with either flat or dished chip



# MILWAUKEE DIE FILER with the NEW All-Purpose Deep-Throated OVERARM

Performs All Three Die-Making Operations efficiently, at 40 to 60% saving.

- Files, Saws or Lapping Stones are chucked at upper end.
- Spring Tension on saws and thin files adjusted by moving overarm chuck assembly up or down.
- Chucking close-to-work results in greatest rigidity of saws and files.
- Other advantages include: Instant inspection of work-piece; 15°, 4-way table-tilt; lower chuck, with ball-jointed jaw, permits perfect alignment of files.

### MILWAUKEE PROFILE GRINDER

1/2 H.P. Motor maintains high spindle speed and full capacity. Uses larger grinding wheels. Colletchuck permits easy mounting or removal of wheels. Compound tilting table. Builtin diamond wheel dresser. Two spindle speeds, 20,000 or 30,000 R.P.M. Write for Litera

ture and Name of Nearest Dealer.



# RICE PUMP & MACHINE CO.

Division of Milwaukee Chaplet & Mfg. Co. 1027 S. 40th ST. MILWAUKEE 4, WIS.





E. F. HAGER AND SON QUEENS VILLAGE 9 • NEW YORK Mfrs. of Hager Measuring Microscopes breaker. It is ruggedly constructed and designed for ready duplication of established grinds. Two calibrated setting dials provide

Two calibrated setting dials provide for accurate adjustment in any position and cam index plates speed up the grinding of rectangular, square and triangular inserts. The stop is lifted out of position for grinding round inserts. The spindle of the fixture is of the preloaded ball bearing type and is ground after assembly in the fixture to assure precise alignment. Collets are available for all type inserts in standard sizes. For complete details, write:

Super Tool Co., Dept. BB 21650 Hoover Road Detroit 13, Mich.

# CESCO CUP-TYPE SAFETY GOGGLES

A new cup-type goggle, stressing safety and comfort is announced by the Chicago Eye Shield Company. The goggle features newly developed molded thermoplastic cups. This material gives the strength and durability of commonly used substances, with 30% to 40% lighter weight. Cups are engineered to fit both left and right eye areas snugly yet gently, and have broad contact surfaces which eliminate "pressure spots."



Another feature is the molded rubber headband, which provides added wearing comfort. This headband holds the goggle firmly with less tension; it will not kink nor twist, and has no buckles or sharp edges. The new Cesco cup-type goggle is available in various styles for chipping and welding protection. Write for complete information, to:

Chicago Eye Shield Co., Dept. BB 2300 Warren Blvd. Chicago 12, Ill.



# Universal Stock Reel

The Humm Universal Stock Reel is an essential device for the handling and feeding of coil stock to Power Presses.

 Adjustable Reel to fit various sizes of coil.

 Reel is adjustable to suit height of Press.

3. Reel can be inclined to any position.

Stock Reel with plain bearing \$55.00

Stock Reel with roller bearing \$65.00

Manufactured By

John Humm Safety Equipment Co. 253 SHEFFIELD AVE., BROOKLYN 7, N. Y.

## **DURANT AUTOMATIC SCRAP CHOPPER**

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A new automatic scrap chopper, which is claimed by its manufacturer to reduce scrap handling costs, at the same time increasing the value of cut scrap, has been introduced by Durant Tool Supply Co., Division of Durant Manufacturing Co. The operating costs of the Durant Scrap Chopper are negligible, since it is powered by its own electric motor. The unit is furnished in three models, Nos. 100, 200 and 300; the first two models are operated by a 1/4 h.p. motor, and No. 300 by a 1/3 h.p. motor.



The major differences in the models are the dimensions of the scrap which is accepted by the three units; Model No. 100 accepts pieces of 3" width, .065" thickness; Model No. 200 takes scrap 4" wide, .045" thick; the Model 300 will cut material 6" wide, .035" thick.

It can be shifted from one power press to another in just a few minutes. The Durant Scrap Chopper can be used with any power press with any type of automatic feed or with hand feeding. The feed may be on the left or right hand side of the press, or the front or back; the unit will perform just as effectively. For complete data write:

Durant Tool Supply Co., Dept. BB 155 Orange St. Providence 3, R. I.

# KEYWAYS A Foot A Minute With A MASTER CONVERTER



BASIC MILLER and 7 Interchangeable HEADS
THE MASTER LATHE CONVERTER

The world's most versatile auxiliary machine tool. Result of 14 years of designing, engineering and building multi-purpose milling and grinding attachments. Also does internal keyseating, drilling, reaming, boring, thread milling and hundreds of other metal working jobs.

MAXIMUM PERFORMANCE MINIMUM COST Write For Descriptive Literature

MASTER MANUFACTURING CO.
1310 E. Avenue "A", Hutchinson, Kansas



This new, streamlined bench type grinder assures fast, quality finishing on metals, plastics, wood, fibre...at low cost. Built to machine tool specifications, Standard D-4 is equipped with improved band tension control and specially designed protective motor hood  $4x36\frac{1}{4}$  band. The ideal portable unit.

OTHER STYLES AND SIZES IN NEW MANUAL ON FINISHING—WRITE TODAY

WALLS SALES CORP.

# **DENISON 1-TO-35-TON OIL-HYDRAULIC PRESSES**

The Denison Engineering Company has announced the standardization of their Multipress line of oil-hydraulic equipment for operations on production-run and problem jobs requiring pressing capacities from 1 to 35 tons.

This line now provides a flexible range of complete, self-contained presses to cover a wide variety of industrial requirements. The presses are available in seven standard frame sizes, each designed for specific dimensional and tonnage re-

quirements. Three interchangeable groups of elements comprise the major operating components within the Multipress oil-hydraulic press frames and offer a choice of combinations for varying ram speed and control. These units include the hydraulic power assemblies, cylinder and ram assemblies of several sizes, and control valves of ten different types.

It is now possible to obtain the exact tonnages needed for individual applications; the regulative ram stroke length for maximum efficiency; the actual speed of ram action to turn out high production at low cost; and correct daylight opening, plus throat depth, in the frame to provide sufficient work-

CHOICE OF THROUGH THE THROUGH AND FAMILIES

CHOICE OF FOUNDER AND RAMA ASSEMBLIES

CHOICE OF FOUNDER ASSEMBLIES

CHOICE OF FRAME SIZES

CHOICE OF RAM SPEED - to 1300 ipm

CHOICE OF THROUGH OFFINIOS

CHOICE OF OPERATING CONTROLS

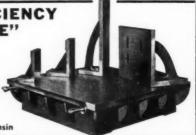
area to accept parts or assemblies being processed.

These factors are made to match the specific requirement by adapting to each unit the appropriate operating components, consisting of (a) cylinders with pistons from 1½" to 4¾" diameter, rams from 7%" to 3¼" diameter, and ram strokes of maximum lengths from 6" to 15"; (b) ram speeds for closing from 220 to 1300 inches per minute, pressing from 80 to 570 i.p.m., and return from 130 to 920 i.p.m.; (c) power assemblies with electric motors from 1½ to 30 h.p. and hydraulic pumps in capacities from 2 to 20 gallons per minute that provide maximum operating pressures from 970 to 3950 pounds p.s.i.;

# FOR MAXIMUM EFFICIENCY TRY "MILWAUKEE"

Milwaukee Surface Plates, Angles, and Parallels with their accurate surfaces and longwearing qualities are designed to save you both time and money. Write for your free catalog today!

J. C. BUSCH COMPANY
ENGINEERS AND MACHINISTS SINCE 1907
165 S. Borclay Street, Milwaukee 4, Wisconsin



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(d) choice of 10 different types of control valves for manual or completely automatic press operations.

The new standardized Multipress line of oil-hydraulic presses provides frame sizes ranging upward from the "B" frame press of 1-ton maximum capacity with 10" daylight opening, 45% throat depth, and 10" by 10" base plate tooling area, to the "K" frame model of 35-ton maximum capacity with 24" daylight cpening, 12" throat depth, and 20" by 31" base plate tooling area,

For complete, individual specifications, write:

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Denison Engineering Co., Dept. BB 1160 Dublin Road Columbus 16. Ohio

#### "TRU-LOC" FEATURES EXTEND CHUCK JAW LIFE

To compensate for adjustment and wear in universal chucks, The Whiton Machine Co, has designed and developed the "Tru-Loc" Top Jaw Adjustment. The purpose of the "Tru-Loc" is to get more use out of jaws and scroll

without the necessity of securing new ones

The principle of the "Tru-Loc" is an eccentric bushing with adjusting screws alowing adjustment of the top jaw up to 1/32" by manipulation of two adjusting screws. By this method the top jaw can be trued up to compensate for



wear on the threads of both the scroll and the jaw.

The "Tru-Loc" Adjustment has been designed to fit any American Standard Master Jaw. For details, write:

Whiton Machine Co., Dept. BB New London, Conn.





# WAR SURPLUS SURFACE PLATES

BRAND NEW Precision surface plates. Finest quality Hand Scraped. Manufactured by CHALLENGE MACHINERY CO. Original factory packing. 12\*x18\* with ½\* thick plate. 3\* ribs. Complete with durable wooden protective cover and wooden handles. Made to strict Gov't. specifications. A buy you can't afford to miss?

10 DAYS TO RATED ACCOUNTS DRDER BY MAIL SEND CHECK OR MONEY ORDER.

ASSOCIATED TRADERS, INC. 255 Kalamath St., Denver, Colorado

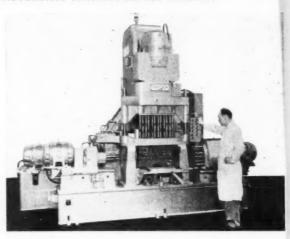
# NEW SNYDER AUTOMATIC SPECIAL-PURPOSE MACHINE

Processing 32 holes every 45 seconds in a six cylinder, cast iron alloy block is the purpose of a new three-way, automatic special-purpose machine announced by Synder Tool & Engineering Co., Detroit.

The process comprises counterboring six exhaust valve insert holes, taper reaming six inlet valve passages from the top, counterboring one hole for a Welch plug, countersinking two holes in the rear end of the block and countersinking 17 holes in the front end of the block.

Clamping is hydraulic and the work cycle is automatic, permitting the use of unskilled help. The cylinder block

6" x 36"



is loaded onto an elevator platform and lowered down over solid locating pins. The block is then clamped at



12" x 48"

A precision tool for testing and checking parts between centers. Both heads adjustable, locked in place by lever-operated clamps. Work is held between one fixed center while spring loaded retractable center clamps work in position. Dial indicator with adjustable holder available as extra equipment.

> FREE ADDITIONAL DATA covering complete specifications and additional features is contained in this bulletin. Write for your copy today. Ask for data sheet No. 484.

# SUNDSTRAND ACHINE TOOL COMPANY

2535 Eleventh St. . Rockford, Illinois, U.S.A.

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12" x 72"

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in al fo both ends by two hydraulically operated wedge clamps. The automatic work cycle is interlocked with the hydraulic clamping mechanism and can be started only when clamping is completed. High speed steel tools are used throughout at speeds ranging from 60 to 90 s.f.p.m. Tool feeds are variable, permitting the application of the machine to blocks of varying composition. The two horizontal heads have a stroke of 10" and the vertical 12". Shaved gears are used in all three heads for smooth, vibrationless operation. The left and right horizontal heads have 5 h.p. and 71/2 h.p. motors, respectively, and are mounted on 1700-10 slide units. The vertical head is powered by a 15 h.p. motor and is mounted on a 20-V-16 slide unit on a special wishbone type column with standard, counterbalance weight set-up. This heavy duty slide unit is used to furnish the large thrust requirements of the taper reaming and counterboring tools. The wishbone type column allows space directly behind the block for the addition of another unit from the rear, if desired for future applications. This design also allows for the easy removal of chips. The base is of welded steel construction, thoroughly ribbed and normalized for rigidity. The machine occupies floor space 80" x 150" including the loading shelf in the conveyor line. Production is 77 blocks an hour at 80% capacity.

For further specifications on this spe-

cial purpose unit, write:

Snyder Tool & Engineering Co. 3400 E. Lafayette Ave., Dept. BB Detroit, Mich.

# CARBIDE TOOL WET OR DRY GRINDER

A standard pedestal-type Carbide Tool Grinder, equipped for wet or dry grinding, has recently been introduced by Willey's Carbide Tool Co. This new unit is designed for the manual grinding of tungsten carbide tipped tools as well as other hard metal tools requiring keen cutting edges and extreme accuracy.

The new grinder, Model No. 60, is

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BEVERLY SHEAR
"S-3" Slitting Shears for slitting, cutting and

"5-3" Slitting Shears for slitting, cutting and trimming sheet steel or any other material, have compound power transmission, which provides smooth, easy operation. Interchangeable and adjustable blades of high quality tempered and drawn tool steel are firmly held in alignment by the rigid frame to assure clean cutting, regardless of the thickness of metal—up to capacity. Unique adjustable shoe, bearing on upper blade holder, provides additional support, for the upper blade, which increases the strength and cutting efficiency of the Shear.

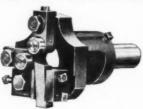
Slitting capacity 1/8"; trimming 3/16"; bar capacity 1/4" x 2" (capacities given are in mild steel)

Ask your Beverly Dealer for a demonstration or write for full details and illustrated circular.

High Carbon High Chrome Blades for cutting stainless available on special order.

The BEVERLY SHEAR
MFG. Co. C
3005 W. 111th St.
Chicago 43, III.

# WATSON Tangent Cut Box Tool



A general purpose, tangent cut, roller rest box tool of wide range for turning diameters from bar stock custings, forgings or other material. Applicable to all sorts of screw, turret and other machines, hand or automatic. It is simple to set and eliminates resetting when it is necessary to grind the bit. Write for descriptive folder giving complete information.

The Watson Mfg. Co. 2220 ALBION ST. TOLEDO 6, OHIO

CARBIDE
TOOL
GRINDER
TOOL
FEATURES:

Grinds Chip
Breckers

Forced Feed
Coolant

9000 r.p.m.
spindle

Diamond
Wheels included

UNITED STATES DIAMOND WHEEL

701 Illinois Ave. CO. Aurora, Illinois

designed to use an  $8" \times 11/4" \times 4"$  vitrified silicon carbide wheel for rough and semi-finish work, and either a  $6" \times 34" \times 11/4"$  diamond wheel or a  $6" \times 11/4" \times 21/2"$  vitrified silicon carbide wheel for finish grinding operations. The surface feet speed of the 8" wheel is approximately 7000 f.p.m., while that of the 6" wheel is approximately 5000 f.p.m. The motor of the unit is a 3/4 h.p., heavy duty, ball bearing, 3/450 r.p.m., reversible type, with bearing adjustment.

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The semi-steel tool rest table measures 18" x 8". It is equipped with angular adjustment from horizontal position, 15° above, 30° below. A keyway is provided for protractor, tool guide and dresser. The table is adjustable to and from the wheel by means of an adjusting screw operated with a crank,

The cool cutting action of the wheel is insured by a steady flow of coolant, 60 gallons per hour, force fed by an electrically driven pump, with a 1/10 h.p., 3600 r.p.m. motor mounted inside the pedestal.

For complete specifications on this new grinder, write:

Willey's Carbide Tool Co., Dept. BB 1340 W. Vernor Highway Detroit 1, Mich.

# WALKER 16" PERMANENT MAGNETIC CHUCK

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The O. S. Walker Company, Inc., announces the standardization of the largest rotary permanent magnetic chuck ever built, a 16" unit, which culminates six years of research and engineering and in transforming engineering principles into practical designs. This has resulted in an increase from five sizes of permanent magnetic chucks to twenty-five sizes now classified as standard. The



O. S. Walker engineers are now satisfied that they are no longer restricted to sizes nor shapes but can design their product to unlimited sizes. The only condition would be the economics involved, since as sizes increase, the differential between the permanent magnetic chucks and the electro magnetic chucks increases rapidly.

The first condition in making a large permanent magnetic chuck is the development of uniform lines of force over the entire surface. This problem becomes increasingly difficult as the area of the chuck is increased. This difficulty increases as the square of the diameter and not as a single proportion. This is accomplished by employing the exact proportion of Alnico to the mass of iron necessary to polarize the entire surface and at the same time to have magnets polarized with equal amounts of force.

For complete information, write: O. S. Walker Co., Inc. Dept. BB Worcester 6, Mass.

# **PUNCHES** and DIES



A large range of round, flat, square, and oval sizes is carried in New York stock.

Special Tools and Odd Sizes Made to Order

Circulars covering our line of metalworking tools available.

T. H. LEWTHWAITE MACHINE CO. 312 East 47th St., New York 17, N. Y.

# LUMA Soldering Tool



## RESISTANCE TYPE

A proven teel for all seldering jebs large or small. Heats instantly—low maintenance. Safe to operate. Write for details.

LUMA ELECTRIC EQUIPMENT CO.

# DIE HEADS

# Chasers To Fit Any Type of Die Head Also Solid Taps

can be ordered on one purchase order. This eliminates any chance for error when special threads are required. We offer a Hygrade Product with prompt deliveries and a guaranteed saving.



Any form of thread can be furnished on taps and chasers.



Tangent Chasers can be furnished in cut or ground threads.



Radial chasers can be furnished in milled, tapped or ground form. Circular chasers furnished in ground form

The most complete line of threading tools offered by any one company. Multiple thread milling cutters — shell or shank type.



Write for Catalog.

The CHASO TOOL CO., Inc. Royal Oak, Michigan

#### J & S ALL-PURPOSE JAW CLAMPS TESTED FOR 2-TON DOWN PRESSURE

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The new All-Purpose Jaw Clamp, a recent development of J & S Tool Co., Inc., is designed for holding a wide variety of shapes and sizes of workpieces quickly and firmly against the face plate or table of a machine. No part of the clamp is higher than 15/16", making it possible to pass over the whole clamp when holding work which is 1" high or more. The full surface of work 3%" high or over may be machined, as shown in the illustration,



since the jaw is only 23/64" thick. The clamp facilitates controlled centering adjustment on the clamped workpiece, and thus eliminates secondary operations.

The J & S Clamp can be used in a wide variety of machining operations, on lathes, planers, milling machines, etc., as well as on special production machinery.

Since the clamp does not protrude above any part of a work-piece over \(^{8}''\) thick, it cannot interfere with the reading of the indicator dial of vertical boring and milling machines. The use of these clamps eliminates the need for different length studs and blockings. There are no separate parts to become mislaid, and there is only one adjusting screw. The clamps are made of hardened tool steel throughout, and have been tested for two ton down

pressure. Clamps are furnished in sets of four, including standard socket wrenches, hardened T-slot nuts, ½-13 special bolts and hardened washers. Write for complete details to the manufac-

J & S Tool Co., Inc., Dept. BB 477 Main St. East Orange, N. J.

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#### ALL-STEEL INTERLOCKING DRAWER UNITS

These useful drawers, of all-steel construction, have been designed for parts storage by the Cincinnati Venti-lating Co., Inc. They are provided in two sizes; the larger and more recent size having dimensions of 11-11/16" front to back, 3-15/16" wide, and 3" deep. The units have ben designed to interlock with others at the top, bottom and sides, in order to form a rigid cabinet. This new large Multi-Drawer will accomodate five dividers. It has been made especially to meet industrial plant demands, following the success of a smaller, similarly designed small parts Multi-Drawer. The dimension of the smaller unit are 5", front to back, 21/8" wide, 21/4" deep, accomodating three dividers.



These all-steel Multi-Drawers assemble quickly, and will fit into a variety of size or shap spaces. For complete information, send for bulletin to:

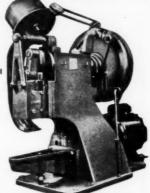
Cincinnati Ventilating Co., Inc. Dept. BB Covington, Kentucky

# SAVE TIME AND MONEY

This is the most modern time-saving eyelet attaching machine.



- . Will take all sized eyelets.
- . Low maintenance.
- Raceways and tools changed in minutes.



#### SEGAL EDWARD

Mirs, of Eyelet Attaching Machines 25 Beekman St. N.Y.C. 7, N.Y.



MONTGOMERY & CO., Inc. 53 PARK PLACE, NEW YORK 7, N. Y.

# YOST DRILL PRESS VISE



This new Yost vise has been designed expressly for use on drill press operations. Does away with special and costly jig fixtures.

Offered in two sizes.

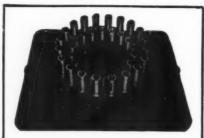
Vise No.	Width of	Opens	Weight
	Jaw, Inches	Inches	Pounds
1D 2D	31/2	31/2 51/2	121/2

Do you need a vise of ANY type?

Write today for bulletins on
the extensive Yost line

# YOST MFG. COMPANY

1335 SO. MAIN STREET
MEADVILLE, PENNSYLVANIA



Pictured: a 38-Spindle Heavy-Duty
Drill Head.

DESIGNERS AND
MANUFACTURERS OF
MULTIPLE DRILLING EQUIPMENT

We invite your inquiry.

MICHIGAN DRILL HEAD CO.

# ISOMETRIC DRAFTING MACHINE "PERSPECTOR"

A new instrument for the rapid production of isometric drawings is introduced by Omerex Precision Products Corporation. This compound pantograph drafting machine produces true isometric projections at ½ scale directly from orthographic drawings. This device,



called the "Perspector", claims two unique features. The compound pantograph link system is arranged to give a greater reduction in the horizontal plane, in such proportion that a circle scribed by the tracing point is converted by the drawing point into an ellipse, with the correct isometric ratio between the major and minor axes. The other feature is the provision of two tables, one under the tracing point and the other under the drawing point. The drawing table is mounted on a slide and can be traversed in relation to the fixed table by means of a handwheel, thus permitting rapid drawing of lines that are foreshortened to the proper isometric scale.

Various accessories, such as French curves, a small circle-tracing device and radius arms with radial grooves are provided to facilitate the machine's use. The pencil can be replaced by a pen for preparing ink drawings. This instrument enables draftsmen to obtain accurate isometric drawings at high speed. In certain types of work, projections of a component can be made directly from given dimensions without the use of a plane or elevation. This equipment is being introduced in the United States

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MACHINE and TOOL BLUE BOOK

May, 1949

by the American representatives for Isometric Projections Ltd., Newport Pagnell, Bucks, England. Write for complete information to:

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**Omerex Precision Products Corp.** Chrysler Bldg., 405 Lexington Ave. New York 17, N. Y.

#### THE TAPORDRIL, FOR CLOSE CENTER OPERATIONS

The Tapordril, an efficient, rugged high-speed driving unit, designed for drilling or tapping two or more holes on close center work, has recently been put on the market by L. E. Ottney & Co. This useful device may be used in a drill chuck or a tapping attachment, where it provides an economical method of drilling, tapping, reaming or counter sinking. Sizes may be ordered from 3/8" to ½" centers for the Model "F", or from 38" to 34" for the Model "R". The Model "F" is illustrated; this unit runs in the same direction as the driving spindle. The Model "R" runs in reverse. since it uses no idler gear.



Both models are made on fixed centers, and are not variable, thus giving good straddle bearings for long life. The gears are specially cut from alloy steel; the housings are made of the best bearing material. For complete specifications on the Tapordril, write:

L. E. Ottney & Co., Dept. BB 3650 W. Eleven-Mile Road Royal Oak, Mich

INTRODUCING ---

Machine Shop Floor Patch



# GREASE & OIL RESISTANT Shipped in Complete Unit!

FLEXROCE M.F.P. has been carefully developed to meet and overcome the conditions existing in machine shops. Thorough tests have proved that it offers so much resistance to grease and oil disintegrators as to give absolutely satisfactory service on machine shop floors.

# ADVANTAGES

- (1) M.F.P. offers extremely high resistance to oil and grease, is shockproof and
- provides the maximum of foot-case and light reflection.

  (2) M.F.P. is far more grease resistant than other patching materials. It requires only ½ inch "chip out" around edges
- (3) In addition to its shatter-proof proper-ties, M.F.P. has a surface hardness and smoothness reducing load-drag to the minimum.
- (4) M.F.P. can be applied over concrete or wood, and is of the same color as con-
- (5) It is shipped as a complete unit—there is no sand, stone, cement nor any other material to buy.
- (6) M.F.P. is extremely easy to apply and a good job can be done by anyone who will follow the simple directions.

Write for New Folder

3634 FILBERT STREET FLEXROCK CO. PHILADELPHIA

M.F.P.

(MACHINE SHOP FLOOR PATCH)



#### CONE-DRIVE REDUCTION UNITS PROVIDE 86,000 POSSIBLE COMBINATIONS

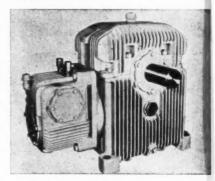
By using standard speed reducers as primaries and secondaries, a new line of double reduction units comprising over 86,000 combinations as to capacity, model and ratio has been introduced by the Cone-Drive Division of Michigan Tool Company. The combination of standard reducers provides models with input ratings of from ½ to 68 h.p., from 4,000 to 244,000 in.-lbs. output torque, and reduction ratios of from 25-to-1 to 4900-to-1.

An advantage of the setup is that it enables a combination of standard units to meet a wide variety of operating conditions, the same as in "built-to-the-job" double reduction reducers. Thus, standard ratios for primary and secondary reducers can be combined in a number of ways according to operating requirements to give the same overall ratio. Similarly, size of primary or secondary reducer can be varied to suit the specific operating conditions.

Individual primary and secondary reducers are interchangeable and separately replaceable within given size ranges and may be dismounted and quickly converted to single reduction units if desired, since each component retains its independent lubricant supply and breather. Use of standard gear sets also makes it simple to change the ratio of any combination where and if desired since all gear sets and bearing mountings are interchangeable for all models of the same size.

These are actually only 5 sizes of pri-

mary reducers and 8 sizes of secondaries. Two of the primaries (2½" and 3" center distance) can be combined with four of the secondaries (4" to 7" center distance). The three other primaries (4", 5", and 6" center distance) go with the other four secondaries (7" to 12" center distance). These distances of course correspond to much larger sizes in conventional reducers, due to the greater load carrying capacity of the gearing used.



The illustration shows a typical Cone-Drive double reduction speed reducer obtained by using a standard Cone-Drive 4" center distance HV reducer as a primary, combined with a standard 8" HU reducer used as secondary. For complete specifications, write:

Cone-Drive Div., Michigan Tool Co. 7171 E. McNichols Road, Dept. BB Detroit 12, Mich.

# ILLUMINATED INSPECTION



"Lenox Detects Hidden Defects" while exploring the dark holes of industry — guns, hollow shafts — Refinery, well drill and other tubing, irregular dark spaces.

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Twenty-eight years. Give diameter, length and shape of cavity.

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NATION-WIDE ASSEMBLY SERVICE

HIGHLY CONTROLLED ACCURACY

COMPLETE INTERCHANGEABILITY

... when you specify

DANLY Precision Die Sets

Nation-wide die set assembly service, pioneered and perfected by Danly, is today a highly specialized business offering the stamping industry a fast, efficient means of obtaining deliveries on short notices. Because there are several Danly types and several thousand interchangeable combinations, a simple catalog selection is all that is usually required to suit specific needs.

The highly controlled accuracy of Danly Die Sets, with guide posts and bushings ground and lapped to close precision tolerances, assures top performance and long die life.

In addition, because designs and tolerances are standardized and maintained, you are assured of complete interchangeability. This is why so many plants have found it profitable to standardize on Danly Die Sets gaining flexibility of operation and worthwhile economy.

> Use Danly's Special Machining Service and Save Time . . .



For special die sets, include any additional machining on your special die set order. Die wells, inserts, keyways and other operations will be performed to your specification.

Write for free bulletin and complete details



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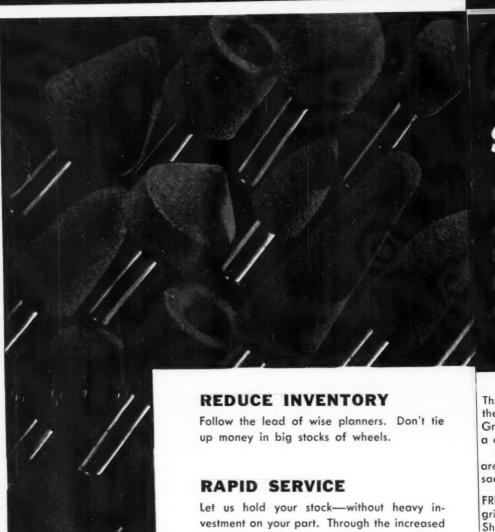
DANLY MACHINE SPECIALTIES, INC.





25 YEARS OF DEPENDABLE SERVICE TO THE STAMPING INDUSTRY

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Let us hold your stock—without heavy investment on your part. Through the increased facilities of our modern new plant, we are in position to give you the finest service in the industry.



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by reducing inventory. Get your wheels as you need them, made to your particular specifications.

# STARTLING ADVANCE BETTER FINISHES

FOND

This improved bond is starting another trend in the abrasive industry. Used only in Chicago Grinding and Mounted Wheels—the result of half a century testing and experience.

F. V. Bonded Wheels will produce finishes that are superior and have a lower RMS without sacrificing production.

FREE ENGINEERING SERVICE. Let us help with your grinding problems. Send for Engineering Data Sheet making it easy for you to submit information from which we can recommend the wheel to do your job best.

# CHICAGO WHEEL & MFG. CO.

Makers of Quality Products since 1895

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X-RAY VIEW reveals advanced engineering and finest craftwork of precision mechanism inside the heavy-steel, streamlined case.

# SAWS ANYTHING



Alloys Aluminum Asbestos Bronze Castinas Ceramics Copper Fabrics



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# WORLD'S FASTEST STOCK-REMOVING PROCESS

Used in all industries to speed up production and slash costs, DoALL Contour Machining starts where ordinary bandsawing stops. Cuts all materials including hardest alleys. "Slices" off stock in minutes - no slow "whittling" to shape. External, internal, straight or curved cuts at any angle. Continuous cutting-no time-wasting backstroke. Smooth power at infinitely variable speeds.

# THE RIGHT SAW BLADE FOR EVERY PURPOSE

The right blade on the right machine gives the "teamwork" needed for high production economies. There are many types of DoALL blades; hundreds of sizes in width and pitch; various sets and thicknesses. DoALL-pioneered, patented, "strip-out" blade containers, protect fingers and keep blades undamaged.

SPIRAL ANY DIRECTION SCALLOP PAPER, CLOTH, RUBBER FRICTION SAW MEAT-TREATED STEELS, ALLOYS DIAMOND TOOTH GLASS, CHINA, TILE, PORCELAIN PAPER KNIFE BOOKS, PADS, MAGAZINES SKIP TOOTH POOD, PLASTICS, PAREN, MARD-PRESSED BOARD, ETC. CLAW TOOTH STAINLESS STEEL, ETC. BUTTRESS

PLYMOOD, PLASTICS, LAMINATES, WOOT, ETC.

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REPRESENTATIVES

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#### NEW VARIABLE SPEED UNIT WITH BUILT-IN REDUCER

Graham Transmissions Inc., manufacturers of variable speed drives, have introduced their new Model 41MW, with built-in motor and built-in worm reducer. The new unit provides five available ratios of reduction, as follows: 5:1, 12:1, 18:1, 27:1, and 54:1. The gear box may be fastened to the transmission housing, as shown in the illustration, to give horizontal position of the slow speed shaft, either to the right or left; the output shaft may also project vertically, either upward or downward.

The heavy cast iron construction of the main transmission housing provides rigid mounting of this motorized unit through four supporting bolts, as shown—the same as would be required for a motor by itself. This construction feature permits extreme simplicity and compactness, and allows the drive to be fitted in readily as standard equip—

ment in the layout of slow speed machines. This construction is available in Graham Variable Speed Transmissions from 1/25 h.p. to 1 h.p.



For complete specifications on the Model 41MW, write

Graham Transmissions Inc., Dept. BB 3764 N. Holton St. Milwaukee 12, Wis.

# WESP0

PRECISION-MACHINED, HEAT-TREATED

# **T-BOLTS**

# Hold Work Firmly and Safely in Machine T-Slots



948

WESPO T-BOLTS are made to conform to standards set up by leading press manufacturers and users throughout the country. The bolt is made from a 3135, or equivalent, steel forging, heattreated and drawn to a Rockwell of from 32 to 38 giving a tensile strength of approximately 170,000 lb. The back of the head is faced square with the body and the bolt is threaded to a class 3 fit. Nuts are threaded to a close fit and are hardened. Washers are hardened and ground on both sides. WESPO T-BOLTS are made in  $\frac{1}{2}$ "  $-\frac{5}{2}$ %" and  $\frac{3}{4}$ " diameters, lengths to 12". Also 1" bolts in lengths 4 to 22". All parts are cadmium plated to prevent rust. Write for bulletin and prices.

Representatives in industrial areas. Complete stocks at factory and at:—
ROCHESTER, N. Y. Rekers & Recestl
WICHITA, KAN. Cummings & Company
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CANTON, OHIO Service Tool & Supply
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WEST POINT MFG. CO.

19631 MERRIMAN COURT FARMINGTON, MICHIGAN



is the ONLY Center

# OVERLOADINDICATOR

Look for the RED BAND

You no longer have to guess whether you are overloading your live center thrust bearings if you use MOTOR TOOL LIVE CENTERS. When the load is too great the RED BAND around the spindle disappears into the housing. You can see at a glance when overloading occurs. This is an exclusive feature, developed by Motor Tool which cuts repair costs to practically nothing if due diligence is exercised. As long as the RED BAND is visible you are running COOL and SAFE.

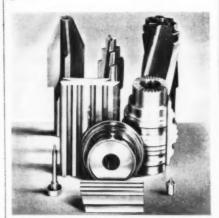
N E W descriptive folder . . . and verified case histories of how MOTOR TOOL LIVE CENTERS have out-performed and outlasted ALL other centers on exceedingly tough, continuous-run jobs.



## MICRO-KEEN FORM TOOLS FOR AUTOMATIC SCREW MACHINES

A wide range of special form tools is manufactured by the Johns-Hartford Tool Company, under their trade name of Micro-Keen. These tools, of Carbalt' super, high speed steel, are claimed to be able to increase the output and reduce the costs of automatic screw machine products.

Carbalt is a super high-speed steel which occupies a niche well above other high speed steels; due to its greater toughness, it will economically cut materials which are difficult to machine; Carbalt's ability to perform at higher speeds, on most materials, aids in reducing costs. Its exceptional wear resistance insures longer life between grinds.



Johns-Hartford's skilled craftsmen and precision equipment insure the accurate grinding of special profiles and forms on circular and flat tools, counterbores, reamers, recessing tools, flat drills, punches, rolls and heading dies.

Micro-Keen form tools are guaranteed to: (1) produce accurately more pieces per grind; (2) reduce down time; (3) increase production. Johns-Hartford would welcome an opportunity to prove this, with the customer as the judge. \*Trade Mark

For complete information, write: Johns-Hartford Tool Co., Dept. BB 390 Capitol Ave. Hartford, Conn.

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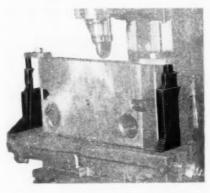
#### CLAMP SUPPORT BLOCKS FACILITATE SET-UPS

A useful line of clamp support blocks has recently been introduced by the Podlin Tool Co. Designated as "Po-Ro" Blocks, these devices are manufactured to provide rapid, simple set-ups in machine and tool and die shops. They can also be used to support clamps in set-ups where work pieces are clamped to machine beds.

The blocks are furnished in three sizes; No. 1, with an adjustment range of from ½" to 1"; No. 2, with range of from 1" to 2½"; and No. 3, with range of adjustment from 2½" to 6½". The "Po-Ro" Blocks can be used in either horizontal or vertical position, and are adjustable in increments of 1/16" from ½" up. The operator can attain correct set-up heights by piling two or more blocks on ton of each other.

blocks on top of each other.
"Po-Ro" Blocks are made with hard-

ened steel, slip-proof interlocking serrations, and flat bearing surfaces, which afford safety and rigidity even under considerable pressure, the manufacturers state.



For complete information, write: Podlin Tool Co., Dept. BB 3920 Wesley Terrace Schiller Park, Ill.



# THE NEW PRECISE SUPER 40 GRINDER-MILLER

The Precise Super 40 with a speed of 45,000 r.p.m., and developing over 1/5 h.p., is an entirely new tool recently perfected by Precise Products Co. With higher speed, more power, more rigidity and accuracy, the new tool extends its

Midget Mills and Carbide Micro Mills up to 3/8" diameter and 1" width. A complete line of tools and accessories adapts the Precise Super 40 to almost any tool or production set-up in standdard lathe, milling machine, drill press or other stationary machine tool.

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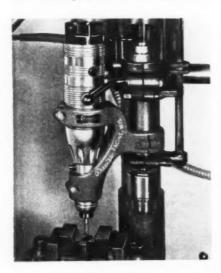
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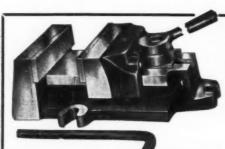


The accessories designed to extend the new tool's usefulness include the Super Coolflex flexshaft extension, a Tool Mount, a Universal Mount, and a line of Lathe Stands with built-in speed control and Magni-Ray Unit for standard and special applications, such as wire stripping and mica undercutting. Used as a handtool or with Coolflex Attachment, the Precise Super 40 also produces mirror finishes (one micro inch and less) on dies and parts, through the use of special diamond compounds.

versatility into the field of machine tool operations. Used with or without the Coolflex Extension or in machine setups, it operates mounted wheels up to 1½" diameter, unmounted wheels, cutoff wheels and metal saws with special arbors up to 2" diameter by ½" width, using speed control, and high speed

Outstanding new features of the Precise Super 40 include a precision machined aluminum-alloy housing, microprecision ball bearings that require no lubrication, and increased rigidity and accuracy of the quill and collet chuck. The air-cooled motor is protected from overload by Fusetrons and is a complete unit with armature and field assembly in a self-contained cartridge that slips in to the housing (patent pending). With a speed control, speed can be regulated within a range from 15,000 to 45,000 r.p.m. For complete specifications and operational data, write:

Precise Products Co., Dept BB 1328 Clark St. Racine, Wis.



# PLUNKET QUICK ACTION VISE for DRILL PRESS or MILLING MACHINE

Designed for production work, using an eccentric motion to apply pressure to jaws.

Eccentric motion moves jaw 5/16".

Size

Net Price
6" jaws, 1½" deep, opens 4"...........\$63.00

Pressure between jaws, with handle
jurnished. 2200 lbs. Net weight 36 lbs.

Pressure between jaws, with handle furnished, 2200 lbs. Net weight 36 lbs. Our complete line includes Vises for Drill Presses, Milling Machines, Shapers, Grinders

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J. E. Plunket Machine Go. 1823 W. Lake St. Chiesgo 12, III.

# TESA MICROMETERS HAVE CHICAGO DISTRIBUTOR

The Tesa Corporation of Switzerland, manufacturers of precision instruments, announce the appointment of the Wacker Sales Company, Chicago, as Midwestern sales representatives for their Imicro Internal Micrometers. This firm is a distributor for dial gages, surface finishing equipment and other inspection equipment.

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These micrometers measure to .0001", thirteen instruments being required to measure .005"—4.000". Master rings are furnished for precision setting of gages. Illustrated is a set covering from .005"—800". Contact for measuring is made by three points for ease in centering and determining of out-of-round conditions.

For information, write to: Wacker Sales Co., Dept. BB 35 E. Wacker Drive Chicago 1, Ill.





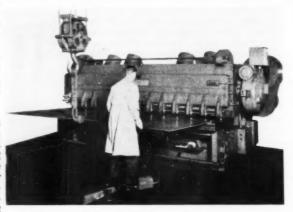
# CINCINNATI SHEAR WITH REMOTE-CONTROL ELECTRIC CLUTCH ATTACHMENT

An efficient remotecontrol, electric clutch attachment has recently been introduced as an optional feature on the Cincinnati All-Steel Shear manufactured by the Cincincinnati Shaper Co., manufacturers of metal working machines.

The standard clutch tripping arrangement on a Cincinnati Shear is a full length treadle, extending across the front of the unit, which the operator can activate at any position along the Shear without the need for moving and positioning a separate

foot control device. The standard arrangement is efficient, and meets most average requirements.

If, however, a large volume of wide or long plates and sheets is to be sheared, the electric clutch control attachment will prove to be a valuable investment. On wide or long sheets, when it would normally be necessary to have an assistant trip the conventional clutch lever, it becomes a simple matter to place the remote control foot switch at any position convenient to a single operator. The application of this remote control device to a Cincinnati Shear increases its usefulness by speeding up the handling time, decreasing



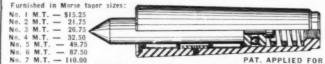
man hours, and increasing the machine output.

The electric clutch control is also furnished with two foot switches and a selector for single or double operator control. This added safety feature increases the output of the Shear and cuts down on accidents. The photograph above shows an operator shearing a 3/8" plate, 12' wide, utilizing the remote control foot switch instead of the conventional foot treadle; the service of a second operator is not required. Further information will be supplied upon request. Write:

The Cincinnati Shaper Co., Dept. BB Hopple, Garrard and Elam Sts. Cincinnati, Ohio

# "NIROL" NEW NEEDLE BEARING LIVE CENTER

Designed for heavy loads and precision work. Minimum overhang of center avoids vibration and chatter. Heavy, powerful spring compensates for any expansion of work due to heating during machining. Compact, neat and rugged. Increases Production — Saves Time — Saves Money.



Also available in Brown & Sharpe and Jarno Tapers. Write for Circular.

# L. F. TREICHLER-PRECISION GRINDING

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# DIX PRECISION-BUILT UNIVERSAL JOINTS

Precision construction is stressed in the manufacture of these Dix Universal Joints made by Lovejoy Flexible Coupling Co. To accomplish the rigid standards of precision — concentricity within .0005" is guaranteed — a specially built joint-testing machine had to be constructed by the manufacturer This Dix dynamometer must register the nearest possible approach to perfection before any joint is passed.

Special equipment produced by Dix engineers finishes grinding inside forks and bearing surfaces of center blocks and all operating surfaces to such a degree of accuracy that pins can not bind, backlash nor inplay. All rivets are ground flush with the body of the joint to permit working inside tubing, or in closest quarters. It is claimed that Dix Joints will operate safely at a greater angle than the ordinary. It is possible to machine around the forks so as to give maximum bearing surface, undercut for the greatest operating angle without sacrificing strength.

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Joints are heat treated to Rockwell 38 on the C scale, which permits working after heat treatment. Special alloy steel, hardened, treated and ground to the Dix precision factors, exceed even rigid U.S. Government requirements. On special order, joints are magnaflux tested, and cadmium-plated. Fourteen standard sizes from 38" to 4" hub diameter are made to rigid specifications—or to user's requirements. Illustrated bulletins upon request; write:

Lovejoy Flexible Coupling Co. 5001 W. Lake St., Dept. BB Chicago 44, Ill.

# ALMOND DRILL CHUCKS



Maximum gripping power with extreme accuracy and long life.

Write for Catalog

T. R. ALMOND MFG. CO. ASHBURNHAM, MASS. U. S. A.



For precision punching of shim stock up to .025, also rubber, fibre, paper and plastic, the new TRANSPARENT Shim Stock Punch provides an easy and economical answer.

ACCURATE ALIGNMENT is assured because the clear plastic top enables the operator to actually see the work. Overall size:  $1/4^{\circ} \times 3^{\circ} \times 3/5^{\circ}$ , which provides for the following standard size holes:  $\frac{1}{3}$ ,  $\frac{1}{3}$ , and  $\frac{1}{3}$ , and  $\frac{1}{3}$ , and begin to enjoy the advantages which only the TRANSPARENT Shim Stock Punch can give your plant.

ALLIED TOOL & DIE CO.
305 N. Baum St., Saginaw, Mich.

### TUBE & ROD END FINISHING MACHINE

Automatic air operation is now available for high-speed tube deburring and other end finishing operations on the Series 600 Tube & Rod End Finishing Machine manufactured by Pines Engineering Co., Inc. The bench model machine, designed for deburring requirements of tube fabricators, uses a foot switch operated air cylinder with hydro-check control to leave the operators' hands free to handle work up to 2" diameter at production speeds of 800 to 1200 tube ends an hour.



The chuck and work-feed action is taken from direct pull of the air cylinder which provides rapid forward and reverse travel of the work to the tool with an adjustable hydro-check to control the feed speed and depth of cut. A work positioning stop and adjustable, positive, "depth-of-cut" stop combine to provide high accuracy. The flexibility of the unit is indicated by the 60-second change-over time of the replaceable chuck jaw inserts and threaded tool holder to fit work diameter. Eight spindle speeds are obtained from the V-belt drive to secure maximum tool efficiency for any work diameter within the 2" maximum range of the machine.

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Tooling can be furnished for such other end finishing operations as center drilling, rod chamfering, drilling, reaming, pointing and boring, in addi-

tion to tube deburring.

The work cycle consists of placing end of the tube or between the chuck jaws and against the stop which locates the work while the operator depresses the electric foot switch, actuating the air cylinder. The piston stroke closes the chuck, removes the stop and feeds the work to the rotating tool. The hydro-check can be adjusted to control any portion of the cylinder stroke to permit a selection of feed speeds for the required operation.

For complete mechanical features on this ingenious new End Finishing Machine, write to the manufacturer:

Pines Engineering Co., Dept. BB 695 Walnut St. Aurora, Illinois

Universal TAP AND DIE **GUIDE FIXTURE** 

3 Sizes Free Folder. Shipped on 5 day approval. Immediate delivery.

LASSY TOOL CO. Plainville, Conn.

\$49.75 with 12 tap adapters No. 5 to



# **assy** Tap&DIE GUIDE

For tapping & threading with spinalignment drill press, lathe, jig

borer. Good Threads, Longer Tap and Die Life, Time Saved, Money Saved!

Shipped On 5 Day Approval Immediate Delivery

LASSY TOOL CO. Plainville, Conn.



# PRECISION AUTOMATIC TAPPING UNIT

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A completely automatic tapping unit has just been placed on the market by the Precision Thread Engineering Co. This new device is provided with automatic forward and reverse movement of the tap or external threading die. It can be mounted in any position, and can be operated from remote electrical controls. It can handle any size tap or die from 0-80 to  $\frac{3}{6}$ -16.

An error common to the operation of conventional automatic tapping units which usually require pressure to start the tap, often results in chamfering the first threads. This possibility has been eliminated by the use of a hardened and ground lead screw, which projects the tap or die throughout the entire cycle of operation. Blind hole tapping to accurate depths can be easily accomplished, the manufacturers claim.



The Precision Automatic Tapping Unit may be operated as many as thirty times a minute without overheating its specially built motor. The device is equipped with either a Morse taper in the spindle end, or a Jacobs Rubber-Flex Tap Chuck. The unit is sturdily constructed of heat treated alloy steel parts which assure long, trouble free operation. The lead screw is easily accessible for replacement or maintenance, and can be furnished in all threads. The integral foot of the assembled unit assures accurate alignment. For complete specifications, write:

Precision Thread Engineering Co. 2540 Park Ave., Dept. BB Detroit 1, Mich.

# \* THE \* WONDER CUTTER

The lowestpriced wire and rod cutter on the market. The hardened cutters last indefinitely.

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erated. A giant for work, cuts

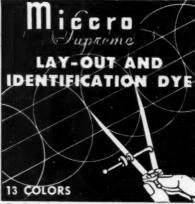
Hand operated. A glant for work, cuts wire and rods up to %-in. round or %-in. square and band iron up to ½ in. by 2-in. Adjustable stop for repeated cuts to same length. Large or small, your shop can use a WONDER CUTTER.

Write today for prices.

# THE FEDERAL FOUNDRY SUPPLY CO.

4602 East 71st St.,

Cleveland, Ohio



For Tool, Die, Pattern or Template layout on metal . . . Quick identification of bar stock, sheet, strips or parts . . . Shows up in sharp relief—dries instantly . . . Write for trial sample and circular.

MICHIGAN CHROME & CHEMICAL COMPANY
6340 E. Jefferson Ave. • Detroit 7, Mich.

# COMPOUND-TILTING ANGLEMASTER SINE VISE

Here is a new development in the metal-working field which is extremly useful in surface grinding, layout, checking and inspection work. It is



called the No. 2-C Anglemaster Sine Vise, and is a recent product of the Ideal Tool & Die Co., Inc.

The Anglemaster Sine Vise can be used on a table, surface plate or magnetic chuck, without the need of strapping or clamping. It can be used for straight work, for the simultaneous squaring and paralleling; for single angles, using either the side tilting or the end-tilting feature only, or it may be used for compound angles, using both the side-tilting and end-tilting features simultaneously, such as on grinding tool bits and similar cutting tools, with both the cutting angle and the clearance or relief angle produced at the same time.

The vise incorporates several exclusive features, including the non-projecting, fully covered telescoping screw; an accurate integral v-slot in the fixed jaw; dovetail ways, and the slide jaw, which is lapped to a precise fit. The base plate of the vise is equipped with extra long rolls, running the full length —6%".

The vise is equipped with two transverse sine rolls, with centers 5.0000"



apart, and running parallel to the jaw faces. The vise swivels on the end roll which is positioned beneath the fixed jaw by engaging two blocks mounted on the base plate, A sloping recess is provided to the inner roll for the insertion of size blocks or a planer gage.

For complete specifications on this new Anglemaster Sine Vise, write for

catalog sheet to:

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Ideal Tool & Die Co., Dept. BB 733-735 Congress St. Schenectady 3, N. Y.

## **NEW MASTER STOCK PUSHER**

A new type improved master stock pusher for automatic screw machines has been developed by Sheffer Collet Co. A one-piece insert replaces the separate segment pads which are usually employed in master pushers.

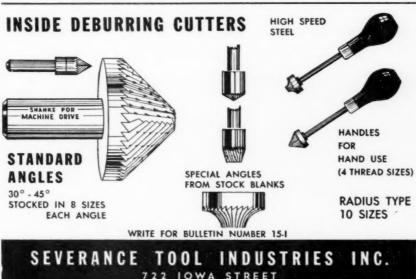
The new device is easy to assemble, since there are no parts to match up or get lost; no pins, screws, or other devices are required for holding the single solid insert. The bearing surface is almost the entire length of the push-

er, thus assuring a more secure grip with less tension and pressure on the stock. In nearly every size, this new master pusher can handle bar stock to the full rated size, due to elimination of protruding shoulders.



The new Sheffer Master Pusher is available with one-piece inserts in file-hard steel, chrome-plated, nodular cast iron, high physical bronze and nylon. A catalog sheet gives further details; it is available upon request to:

Sheffer Collet Co., Dept. BB Traverse City, Mich.



SAGINAW, . MICHIGAN

#### NEW NORTON CERAMIC SURFACE PLATE

A new ceramic surface plate has just been introduced by the Norton Company. It was designed for use in toolrooms and inspection departments where precision setups and checking measurements require the highest accuracy. This plate affords three distinct advantages: extreme wear-resistance, a precisely flat surface guaranteed to be within .0001", and a continuously smooth surface finish.

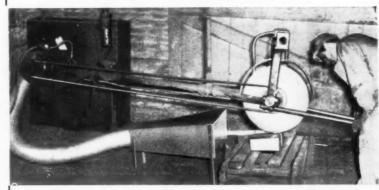
This new Norton ceramic surface plate is made of one of the hardest substances known. A laboratory test recently completed shows the Norton plate life to be at least 40 times longer than the best competing type. Exhaustive field trials conducted on this plate reveal an almost absence of wear, either to the plate itself, or to gages and instruments used on it. These same tests have indicated that the plate will not warp or deform, give expansion troubles, or deflect under load. Its smooth surface is neither slippery nor sticky, and has been proven useful for blueing.

The precise flatness combined with the unusual smoothness of this ceramic surface plate shortens the time required



to take indicator readings. The plate is non-magnetic. It will not sweat or corrode under any atmospheric condition,

Model 1150 (below) is only one of a complete line (250 to 3600 cfm)



AGET-DETROIT CO. 205 Main at Washington ANN ARBOR, MICHIGAN

Phone 2-5585 For **Rush Shipment** From Stock

and it may be cleaned easily with soap powder and water. For complete data write:

Norton Company, Dept. BB Worcester 6, Mass.

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## NORGREN SINGLE-STAGE WELDING REGULATORS

New Single-stage Welding Regulators for oxygen and acetylene, which equal the performance of most two-stage regulators are now in production by the C. A. Norgren Co. They are the yoke type for maximum safety, assure positive delivery of oxygen and acetylene at corret pressures without creep, and hold the secondary pressure while tank pressure falls. An exclusive ballpivoting lower spring rest assures permanently friction-free operation. Another feature is the O-rings between yoke and diaphragm, and between body and bonnet - to seal and cushion the diaphragm for superior performance and easy maintenance.

Norgren Welding Regulators are listed by Underwriter's Laboratories, Inc. Each model is complete with primary and secondary pressure gauges and standard tank connection. They are easily dismantled, requiring only a screw driver and crescent wrench, with-



out removal from the cylinder. Complete information will be supplied upon request.

C. A. Norgren Co., Dept. BB 222 Santa Fe Drive Denver 9, Colo.



## MEDIUM CAPACITY UNIVERSAL CUTTER AND TOOL GRINDER

Gallmeyer & Livinston Company has announced a new medium capacity Universal Cutter and Tool Grinder. It is described as a useful tool for the small shop with limited requirements, or for the large manufacturing plant where batteries of machines of this type are required.



The new Model 10 is a cabinet base machine, combining rigidity with maximum convenience of operation.

A hand wheel, located at the top of the unit, raises and lowers the column and head. The longitudinal movement of 16", may be operated by either hand wheel or lever on the front of the machine or by lever in the rear. Cross movement of the saddle is operated either by means of a hand wheel on the front or by means of one on the rear.

Graduated dials reading in thousandths are provided for both vertical and transverse movements. The head of the Model 10 may be swivelled through 180° and instantly locked at any desired setting. The table may be swivelled to 90° either side of center to provide any desired relation between the table and the grinding wheel spindle.

The grease-sealed precision ball bearing spindle requires no lubrication for the life of the bearings. The spindle is driven through a V-belt by a ½ h.p. ball bearing motor mounted on the head of the machine. Two spindle speeds are provided. The table size is 5" x 30". Longitudinal table movement is 16". Cross movement of wheel is 8". Vertical movement of spindle is 8".

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The manufacturer will send their bulletin No. GL-12-48 describing the new No. 10 Universal Cutter and Tool Grinder to persons interested, Write:

Gallmeyer & Livingston Co., Dept. BB Grand Rapids 4, Mich.

# COOLEY ELECTRIC INDUSTRIAL BOX FURNACE

A new series of Industrial Box Furnaces is introduced by Cooley Electric Manufacturing Corporation, incorporating several design innovations said to produce marked improvement in economy, ease of operation and performance.



The new series embodies a design feature made possible by the Cooley type of elements in which the resistors are embedded in ceramic slabs. In the side walls, they are so placed that an air space is left behind, above and below the slab which then forms a baffle wall creating a natural convection when heated. This arrangement not only equalizes furnace temperatures but causes cool operation of the element and furnace wall, the effect being to develop rapid heating, uniformity of chamber temperatures, and economy in operation.

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Another new feature is the door that completely covers the operating end of the furnace. It actually insulates the front section equally with the other furnace walls. This type of door eliminates the need for heavy fire brick in the vestibule and in the door, and largely eliminates the usual heavy front end heat losses.

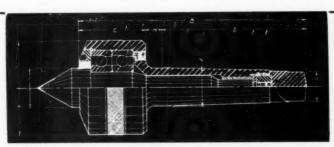
The vertically operated door mechanism consists of a counterweighted yoke which pivots on anti-friction bearings. The door closes gently against the face of the furnace so as to eliminate any chance of shock to the refractories. When desired, a foot treadle can be supplied for operating the door. In addition, the door provides non-obstruction to the entire heating chamber, and it can be raised to the full limit to permit the removal and replacement of all units.

The combination of low wall temperatures within the furnace and the improvement in the door construction and the insulation that it affords to the front of the furnace produces a surprising reduction in power required to hold the furnace temperature.

Cooley Model BL-1, 2, and 3 Industrial Box Furnaces are supplied in the following three sizes: chamber dimensions—12" wide x 8" high are common to all three models. Respective lengths are 18", 24", and 36" with power inputs of 11.5, 14 and 18 KW. They are built for maximum heating temperatures of 1850° F. and are offered for either single or three phase 230 volt operation.

For complete specifications, write:

Cooley Electric Manufacturing Corp. 38 S. Shelby St., Dept. BB Indianapolis 7, Ind.



#### ROOFE STANDARD LIVE CENTERS

A QUALITY PRODUCT

Strong, Rigid, Accurate over long periods of use. Rough and finish turn and thread without chattering. 1000 to 60,000 pounds thrust load for any type of work. Satisfied customers in U.S. and foreign countries evinced by repeat orders.

Write for descriptive catalog

#### HOUSTON GRINDING & MFG. CO., INC.

2110-A Quitman Street Houston 10, Texas

\*Reliable distributors wanted

#### GENERAL PURPOSE SUPERFINISHER FOR SMALL PARTS

A new addition to their line of Superfinishing Machines has recently been made by the Gisholt Machine Co., manufacturers of machine tools. The new unit, designated as Model 50, is a general purpose machine, designed to handle meduium to small cylindrical parts.

The Model 50 has a capacity of 12" between centers, an 81/2" swing, with a 3" maximum working diameter, and a workpiece weight of 100 pounds capacity. It is equipped with variable spindle speeds of from 40 to 1000 r.p.m., thus allowing the operator to select the proper speed for the degree of surface finish required. The quill assembly is adjustable longitudinally, and is clamped in the proper location with respect to the working surface. It is controlled by spring loading and is adjustable from 0 to 45 pounds of pressure. The machine is provided with an adjustable tailstock and a complete lubricating system.

Two standard machine attachments are at present available. The motor

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driven transverse attachment is shown installed on the machine. The center-less roll drive unit for superfinishing parts that have no centers, such as piston pins, rollers, small pistons, etc., is also available.

The Model 50 Superfinisher is suited for small parts, such as plug gages, hydraulic cylinders, pistons and shafts of all kinds. For complete data on this new unit, write on company letterhead for Form AI-1 to:

Gisholt Machine Co., Dept. BB Madison 10, Wis.

#### LUFKIN MICROMETERS NOW FINISHED IN SATIN CHROME

The Lufkin Rule Company has announced that all Lufkin Micrometers will hereafter have a "Chrome Clad" Satin finish which possesses a nonglare quality, providing easier reading in either bright or poor light. Markings stand out sharply against the satin finish, which is also rust and wear resistant.



Whether you want a Spur, Worm or combination—no matter what input or combination—no matter what input or coultput—in either a wall or ceiling insulput—in either a wall from Abart. stallation—you can get it from Abart.

stallation—you dependable, long-life Precision made, dependable, long-life Speed Reducers that are easily adaptspeed Reducers that are easily adaptable to a variety of applications.



More than 75 types and sizes, 1/50 HP to 417 HP and ratios up to 10,000 to 1.

WRITE TODAY

ABART GEAR & MACHINE CO. ABART GEAR & Chicago 50, III.

To insure high measuring accuracy, the anvil and spindle ends have a microlapped, mirror-like finish. The onepiece spindle has hardened and ground threads assuring smooth action. Other features are the cutaway frame, making it easy to reach hard-to-get-at places: rapid-reading (each thousandth graduation on the thimble numbered) and ease of adjustment, a method by which reading lines maintain their original position, directly in the line of vision. Chrome Clad Frames also carry decmal equivalents of 8ths, 16ths, 32nds and 64ths prominently marked for easier reading. Further data will be supplied upon request by the manufacturer.

Lufkin Rule Co., Dept. BB Saginaw, Mich.

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#### NEW DeVILBISS "V" TYPE 4-CYLINDER AIR COMPRESSOR

More compressed air for each unit of electric current consumed was the objective DeVilbiss engineers set in their pursuit of three new and larger capacity compressors for stationary type installations. Further refinement of ex-



isting DeVilbiss features, plus such innovations as 4-cylinder balanced "V"
pump, enlarged cooling system, floating
type tank mount, highly sensitive and
efficient valve design and other improvements account for the high efficiency, smooth operation and long service claimed for these new compressors.
Employing a two-stage principle in

both banks of cylinders, the displacement of the 10 h.p. unit, for example, is 47.86 c.f.m at 175 p.s.i. Similar high displacement is attained in the 15 h.p. and 7½ h.p. models, all of which are available for 175 p.s.i. or 125 p.s.i. use.

The unit's design principles include a dynamically balanced, forged crankshaft, as well as forged connecting rods with automotive type prefit bearings; friction-less ball type main bearings; tapered mounting for balanced flywheel; extra large inter and after-coolers; both ring and centrifugal force oiling; precision bored and honed cylinders; removable cylinder blocks and valve assemblies.

These new compressing outfits will operate from all common electrical currents and are supplied to meet code requirements of different cities and states. For complete details write for Form CK-101.

The DeVilbiss Company, Dept. BB 300 Phillips Ave. Toledo 1, Ohio

#### SCHERR aids to precision - production

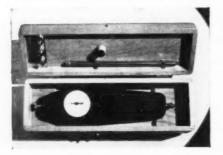
OPTICAL COMPARATORS
TOOLMAKER MICROSCOPES
BINOCULAR MICROSCOPES
COMPARATOR GAGES
GEAR TESTERS
HEIGHT GAGES
ILLUMINATED MAGNIFIERS
GAGE BLOCKS
VERNIER CALIPERS
MICROMETERS
TACHOMETERS
TACHOMETERS
SNAP GAGES
"MAGNE-BLOX"
for magnetic chucks

BULLETINS ON REQUEST

GEO. SCHERR CO., Inc.

#### NEW SPRING INDICATOR PROVIDES ACCURATE FORCE MEASUREMENTS

A new Force Indicator for designers and engineers is introduced by the Hunter Spring Co., (formerly Hunter Pressed Steel Co.). It utilizes a precision compensated spring system to



give easy force measurements which are accurate to  $\frac{1}{2}$  graduation, or  $\frac{1}{2}$  of 1% at full scale of the dial indicator. It eliminates the necessity of outlandish setups and guesswork when making

force measurements for spring specifications and the like.

The spring system consists of: (1) the main compression spring, (2) the compensating extension spring and (3) the load-transmission rod-centering springs and the springs internal to the dial indicator. The force is applied to the system through a load transmission rod. Movement of this rod deflects the compensated spring system. This deflection is measured by a low friction dial indicator (fully jeweled) which indicates the force applied to the system.

Accurate force indications (spring gradient) are possible because the relationship between force and spring displacement is linear throughout the dial range; the gradient of the spring system is made with an accuracy of 1/5 of 1% (accuracy of dial indication is, therefore, the limiting accuracy of the instrument); friction is virtually eliminated in the system.

The instrument is shaped for one-

# HOW SQUARE HOLED SLEEVES

One of the most difficult problems in tool making can be solved easily and quickly with Sturdy Square Holed Sleeves. The perfection of broached square holes can be had in boring bars, milling cutters and many other applications at a small fraction of the cost of imperfect

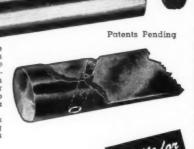
hand-made square holes. The Sturdy Square Holed Sleeve consists of a round sleeve with a perfectly square hole broached through the center. The hole is tapped at one end to receive a back-up screw which is furnished with the Sleeve. The Sleeve can be sweated or pressed into a drilled and reamed hole to make a perfectly square accurate hole in a very few minutes.

The Sturdy Square Holed Sleeve will save you many hours and many dollars in the making of boring bars, tool holders and other tools requiring square holes.

BUSHINGS MADE IN

1. 1/4. 14. 3/8. 7/16 1/2. 5/8. 3/4. 1" STURDY BROACHING SERVICE

23516 TELEGRAPH RD., DETROIT 19, MICH.



Write for Literature hand operation. Six stainless steel force-transmission rod attachments include: a simple thrust button, a pulling hook, a conical point-force applicator, a V-notch thrust fitting for lateral rod pressures, a chisel fitting for reentrant edges and notches, and a sixinch extension rod.

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The currently available unit has a 10-pound capacity; it comes packed in a wooden instrument case. For further information write to W. J. Trendler, at:

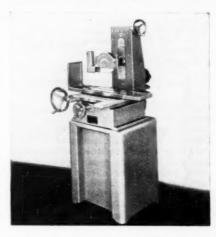
Hunter Spring Co., Dept. BB Lansdale, Pa.

#### SANFORD PRECISION SURFACE GRINDER

A new and improved Surface Grinder, designated as Model MG, has recently been announced by the Sanford Manufacturing Co. The new machine's 12" x 8" x 12" capacity, combined with its sturdy construction, renders this unit an outstanding Tool Room Grinder of continued accuracy.

The Model MG Grinder uses a 6" x  $\frac{1}{2}$ " x  $\frac{1}{4}$ " wheel with standard adapters on the ruggedly built spindle. Ac-

cording to its manufacturers, the machine will handle advantageously any form and crush grinding, as well as a



wide range of other work. In the design and construction of this unit, the

### AIR PRESSURE or VACUUM

for Air Motors... Gas Boosters... Paper Feeders...

Bottle Fillers, Gas Furnaces, Atomizing and All Auto-

Ale from eylinder through by-pass in cylinder head enters this left on its way to the under above. No opening in Bealcond study in pitch hald wing close to cylinder at top, preventing lose of air pressure. After cassing in at losed at lose comes through this shot into cylinder head by pass and there exist he exhibite. No opening in curve time of the of the cylinder head by pass and there exist he exhibite. No opening in curve time of the of the office of cylinder means quick operation.

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IN LET threaded and the cylinder head by pressure and the cylinder means quick operation.

In Let threaded a present the cylinder head by pressure or versus. The readed wing according to the air admitted at lobel, each revokation carrying it ground to the outlet.

matic movements.

#### ON TRIAL

Leiman Bros.
Patented Vacuum
Rotary Air Pumps
Pressure
Take Up Their
Own Wear

LEIMAN BROS. 169-1 CHRISTIE STREET NEWARK, N. J. MAKERS OF GOOD MACHINERY FOR 50 YEARS

Sanford Manufacturing Co. maintained a close contact with its customers in order to develop a machine which would meet their specific needs.

Complete structural and performance details will be sent upon request to

Sanford Manufacturing Co., Dept. BB 1020-28 Commerce Ave.

Union, N. J.

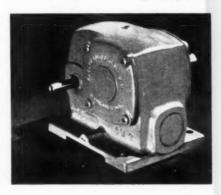
#### NEW EUCLID DOUBLE REDUCTION SPEED REDUCER

Euclid Universal Machine, Inc., (successor to Euclid Machine & Tool Company), has added to its CW line the Model CW-2, double reduction, horizontal type speed reducer. Capacity is one-half the output horsepower, with 1000 inch pounds output torque, depending upon the ratio, the ratio range being from 10-1 to 3840-1. The overall dimensions are 81/2" long x 7" wide x 71/2" high. The input shaft diameter is " and output shaft diameter is 1". Oversize shafts are available upon specification. Other features include aluminum alloy housings, phosphor bronze worm gears, 20° pressure angle gearing, ground thread worms and Timken roller bearings. For complete specifiSE

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cations on this new speed reducer,

Euclid Universal Machine, Inc. 15002 Woodworth Road, Dept. BB Cleveland 10, Ohio

SMALL . EFFICIENT . INEXPENSIVE . PRACTICAL

#### DUCON UNIT-TYPE DUST **COLLECTOR** for dust control at machines

Compactness is combined with efficieny in DUCON design which features multiple numbers of cloth filter bags to provide maximum filter area to air flow.

Filter bags readily cleaned by positive shaker and the dust thus dislodged drops to and accumulates in receptacle pan at bottom of unit. DUCON cloth filter bags last indefinitely providing low cost dust control without constant maintenance.

Complete information given in Bulletin No. U.F.45. Ask for your copy.

#### **DUCON PRODUCTS**

Certrifugal - Wash Dust and Fume Collectors High Efficiency Cyclones Gravity and Inertial Dust Separators Multitube Cloth Dust Collectors
"Unit-Type" Tubular Dust Collectors
Pneumatic Bag Cleaners Dewatering Tanks Bin Indicators Drive Protection Switches

#### THE DUCON COMPANY Mineola, N. Y.

Complete Dust Collecting Installations

147 E. 2nd St.



DUCON Unit showing filter bag arrangement.
Capacities 200—3000 Cubic Feet of Air per minute-four standard sizes.

#### SERVICE MACHINE PRESENTS NEW 5-TON DEEP THROAT PRESS

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A new 5-ton Rousselle Deep Throat Press, Model No. OG, has been added to the regular line of Deep Throat, Open Back Inclinable, and Adjustable Bed Horn Presses, manufactured by the Service Machine Company.



This versatile press is available in both bench and floor models. The 12" throat permits working to the center of 24" sheets, making it extremely useful for large, bulky jobs as well as regular punch press operations.

The frame is an extra heavy semisteel casting, heavily ribbed, providing rigidity and strength. The press is provided with a heavy-duty clutch much larger than commonly used on a machine of this size; it can be easily set for single stroke or continuous operation, and operates at 250 strokes per minute. The OG bench model, complete with motor, weighs approximately 550 pounds.

For complete specifications, write the manufacturer:

Service Machine Co., Dept. BB 7627-33 S. Ashland Ave. Chicago 20, Ill.

# Little Fiver

HYDRO-PRESS

\$84.00

FIVE TONS of smooth power is at your service with this compact and versatile tool.

The perfect press for garage, electric motor shop, refrigerator repair and machine shop.

Will operate lying horizontal.

Ram has removable anvil and retracts itself when released. Stroke 51/2" Weight 100 fbs.



#### ARTHUR J. HURT & CO.

360 SOUTH NAVAJO STREET DENVER 9, COLORADO



LITTELL Automatic Centering Reels are constructed with four arms which operate all at the same time. A free loop of material is supplied to automatic feed, regardless of weight of coil.

Littell Reels are made in 100-lb. to 20,000-lb. capacities. Automatic spindle and cradle types. Plain and motor-driven. Used in thousands of plants for faster production.

Other Littell products include Roll Feeds, Dial Feeds,
Magazine Feeds, Air Valves, Straighteners, Scrap
Winders, Pres-Vac Safety Feeders,
Mechanical Pickers, etc.

BULLETINS.

F. J. LITTELL MACHINE CO. 4153 Ravenswood Ave., Chicago 13, III.

#### NEW DOALL FOUNDRY SAW

Removal of gates and risers from castings by bandsawing is an economical operation that can be employed by both large and small foundries, by means of the new DoAll High-Speed Band Sawing machine which has been especially designed for foundry use. Lower tool cost, easier manipulation of work for close trimming that minimizes cleanup grinding, and greater safety are among the advantages of band sawing.

The new Model 36-L is a general purpose band saw equipped with all essentials for efficient and safe high speed operation. Refinements can be added as needed to meet specialized

sawing requirements.

The unit offers large work capacity in its 36" throat and 20" maximum thickness capacity. The main work table is 30" x 36", with handwheel operated table-tilt, 45° to right and 5° to left. Auxiliary table is 19" x 19". Construction consists of a rigid all-welded-steel "C" type frame and housing



providing excellent stability for smooth, accurate band sawing.



The machine includes a large capacity dust spout for exhaust connection, spring tensioned upper wheel, counter balanced saw post and 36" rubber tired saw carrier wheels. It can be furnished with either direct or belted drive for single speed sawing or with stepless variable blade speed control over a range of 1000 to 5000 or 2000 to 10,000 f.p.m., making it more flexible and adaptable to a wider range of work. Drive motors ranging from 3 to 10 h.p. may be used to suit the power requirement to the type of work.

Foundries interested in cutting costs of trimming castings can investigate the possibilities now offered in the new

unit. Write:

DoAll Company, Dept. BB 254 N. Laurel Ave. Des Plaines. Ill.

#### SYNTRON VIBRATING SCREENS

Syntron Company now has available a new line of Vibrating Screens for economical and efficient rough sizing of parts and materials. These new devices are manufactured with stepped, punched plates having tapered elongated openings-the size of the latter depending upon material specifications.



Single or multiple deck screen plates can be furnished as desired (see illustration).

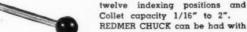
The screen area is activated by the Syntron "Vibra-Flow" Vibrating Motor featuring variable control of material



RC-5

#### Air Foot Control and Valve

The REDMER FOOT CON-TROL & VALVE was developed in order to meet a demand for an AIR VALVE & FOOT CONTROL LOW IN COST but constructed to surpass the high priced Valves.



REDMER CHUCK can be had with either Index Collets or Standard Brown & Sharpe type collets,

Index Chuck

The REDMER INDEX CHUCK has

No. FC-28

V-29



#### REDMER AIR DEVICE CORP. **GUNTERSVILLE, ALABAMA, BOX 247**

# LOW COST SPEED CONTROL

# TRANSMISSIONS

Easily installed in old or new equipment. Standard with over 50,000 users.



V-BELT SERIES

For fractional h.p. drives. Full contact all pitch diameters. Balanced against noise and vibration.

#### WIDE V-BELT SERIES

l to 8 h.p.
ratio 3:1.
Wide V-Belts

and Wide V-Belt Sheaves make this counter shaft unit available as complete drive.

#### "SELECT-O-SPEED"

(not shown) for wide driven speed ranges. Fractional to 1 h.p. Also Wide V-Belt Sheaves. Wide V-Belts, and Adjustable Motor Bases. Deliveries from stock.

Send for complete catalog with valuable engineering information. Write

#### LOVEJOY FLEXIBLE COUPLING CO.

Mfrs. Lovejoy Flexible Couplings and Dix Universal Joints

5026 W. Lake St. Chicago 44, III.

flow This provides a two-purpose piece of equipment, a vibrating screen, and a rheostat controlled vibratory feeder—for increasing the efficiency and capacity of crushers and fine grinders and to prevent damage to belt conveyors.

Additional data is available from the manufacturer. Write:

Syntron Company, Dept. BB 300 Lexington Ave. Homer City, Pa.

#### QUADRUPLE OPERATION PERFORMED IN

The Govro-Nelson Co., manufacturers of automatic drilling and tapping units, has recently enlarged its scope of operations to include the designing and building of complete machines incorporating drilling and tapping units for the performance of several operations at once.



The machine illustrated, designed to drill, chamfer, tap-drill and tap the hole for the adjusting worm of a wrench in 5 seconds per wrench is an example of the types of special machines being built.

The four operations are performed simultaneously with a set-up employing a Govro-Nelson 6-station indexing dial, interlocked electrically with the units. By dividing the tap-drilling operation into 2 stations, the total drilling time is cut in half and the problem of chip elimination is greatly reduced. For complete details on this interesting multi-purpose unit, write:

Govro-Nelson Co., Dept. BB 1933 Antoinette St. Detroit 8, Mich.

220

#### D-S ATTACHMENT FOR RADIALLY RELIEVING LONG TOOLS

A new accessory for the D-S grinding fixture makes possible the radial relief grinding of long tools which are not equipped with centers.

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The accessory mounts on the bars which are provided as a standard part of the fixture. It holds the tool close to the end for grinding support. A clamp is also provided to give extra rigidity to the unit. The accessory swivels on the top bar so that tools with large shanks can be inserted from the back and so that there is no need of moving the fixture from set position when the same form is being ground on more than one tool. Standard drill bushings and liners can be inserted for any size tool up to 13%" diameter.

One large manufacturer in preliminary tests reported a substantial increase in cuts per grind (500%) made possible by radially relieving a drill that could not be so ground without this attachment.



Manfacturer of the new accessory, which is shown at the extreme left of the D-S grinder, will furnish complete information. Write:

Royal Oak Tool & Machine Co. 621 E. Fourth St., Dept. BB Royal Oak, Mich.

## PORTABLE ELEVATING TABLE



Saves TIME and ABOR

Eliminate heavy lifting and cut handling costs. Slight foot pressure varies height up to 15½", leaving operator's hands free. Table swivels and locks in any position.

SEND TODAY FOR ILLUSTRATED CATALOG NO. 2

MIDWEST TOOL & ENG. CO.

# Get on the INSIDE

of your second operation jobs



with a SPEEDGRIP PRECISION, IN-TERNAL CHUCK, AUTOMATIC or HAND operated.

**GUARANTEED** to improve quality and reduce costs. Send for **SPEEDGRIP** folder today.

SPEEDGRIP CHUCK, INC. ELKHART, INDIANA

#### SELF-CONTAINED CARTRIDGE SEAL REDUCES MAINTENANCE COSTS

An efficient cartridge seal which is a completely self-contained unit has recently been introduced by the Cartriseal Corporation, Division of Acme Industrial Corp. This device is claimed to be the solution to all rotating shaft sealing problems. The application is extremely simple; the seal is simply pushed onto the shaft, the mounting screws are tightened, and the unit is ready for efficient operation. The seal is manufactured to fit all standard shaft diameters; stock sizes are carried to fit shafts of from 5/16" o.d. to 2\(^34\)" inclusive.

The structural features of the cartridge seal are extremely simple; all parts are contained in the housing cup which contains a mounting flange to suit the customer's individual requirements. The bearing material used will withstand easily the essential thrust load against it. The hydraulic balance of the seal prevents unseating and

eliminates excessive thrust loads. The retainer stator ring acts as one seal and also serves as a rigid back-up for the rotor, thus only one mounting face is necessary. The contacting surfaces



of both stators and of both faces of the rotor are lapped flat to an accuracy of .00001". The chamber which houses the stators and rotor is filled with a high grade permanent lubricant.

# PRACTICALLY INDESTRUCTIBLE! ACME BENCH VISES have ALL these features



Maximum Gripping Power
Longer Vise Life
No Side Twist or Wobbling
Unbreakable Sleeve Nut
Interchangeable Ground Jaws
Swivel Bases
11 Sizes from 2" to 6"

Also ACME COMBINATION PIPE and BENCH VISES with same outstanding features available in  $3\frac{1}{2}$ " —  $4\frac{1}{2}$ " — 5" Jaws.

ACME TOOL COMPANY
71 WEST BROADWAY NEW YORK 7, N. Y.

The cartridge seal has been adapted to a variety of major applications, including gear boxes, dynamometers, stuffing boxes, torque converters, variable condensers, vacuum pumps, and many similar uses. For complete details on this one-package type seal, write the manufacturers for Bulletin No. SS-5000.

Cartriseal Corp., Dept. BB 200 N. Laflin St. Chicago 7, Ill.

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#### LINDBERG-FISHER CENTRIFUGAL BLOWERS

The Air and Hydraulic Division of Lindberg Engineering Company has announced the development of a complete new and improved line of Lindberg-Fisher single stage, centrifugal blowers.

These units feature full 360° positioning of the air outlet, making it easy to install or adjust in a hurry, and eliminating pipe cutting, welding and extra piping.

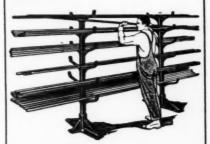


Belt-driven blowers in this new line have been designed to utilize approximately one-half the floor space which is normally required by other conventional type belt driven blowers. Write and ask for Bulletin No. 740 which is fully illustrated and contains dimensions and specifications.

Lindberg Engineering Co., Dept. BB 2444 W. Hubbard St. Chicago 12, Ill.

#### -WANT QUICK SERVICE IN YOUR STOCK ROOM?

The BROWN SECTIONAL STOCK RACK eliminates loss of time in your STOCK ROOM to such an extent that it pays you back its first cost in a surprisingly short time. The time previously lost in end-hauling each bar of stock its entire length is saved by the BROWN SECTIONAL RACK which requires but a few inches of side movement.



Each length, width and thickness of stock is displayed in Gold-Fish visibility for instant selection and workmen waiting for stock are served without waste of time. The BROWN SECTIONAL RACK is a simple, durable article built in five styles from standard inter-locking metal sections. It cannot burn, sag or twist; unattached to the building, it can be moved at will. Changes in length of stock can be met by moving the units nearer or further apart, while increases of stock can be met by simply adding more standard units. Built from metal thruout, depreciation is practically nil. SEND FOR BULLETIN 26-M.

#### **BROWN SECTIONAL RACK**

BROWN ENGINEERING CO.

126 N. THIRD ST. READING, PA.

RACKS . VISES . CLUTCHES . COUPLING



#### BARR ADUSTABLE VERNIER SIZE BLOCK

A useful adjustable Vernier Size Block, designed for the engineer, machinist, and inspector to expedite close tolerance reading, checking and setting, has recently been developed by Barr Instrument Co., Inc.

The instrument may be utilized as an adjustable gage block; it has a range of from 0 to 6", and provides 5850 combinations of .001" readings. It may be used as a direct reading planer gage, feeler, space and surface gage, adjustable parallels, inside Vernier calipers, square, jack and height gage.

It can be used to set tool heights on planers and shapers, to set stops and trips on machines, to set sine bars, snap gages, dial indicators on comparators and other instruments and tools.



The Barr Vernier Size Block is provided with a wide platfrom projecting from the front of the block; its limited base area makes it easy to position on bases, pads and lugs and inaccessible places of machined castings. Its Vernier readings refer to the face of the platform, with the base of the block as zero

The bar scale is made adjustable to compensate for any wear on the base of the block. A thumb screw is provided on the platform to accommodate an arm for holding a dial indicator. The instrument is made of alloy steel, hardened and buffed to a natural finish. The unit is guaranteed for performance and accuracy by its manufacturer. Write for complete data to:

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Barr Instrument Co., Inc., Dept. BB 134-39 255th Street

Springfield Gardens 13, N. Y.

#### RICE BENCH-TYPE PROFILE GRINDER

The bench-type profile grinder reaches a high degree of efficiency and versatility in the new models recently introduced by Rice Pump and Machine Co. Designed primarily for high-speed precision grinding of internal and external contours; curved, odd and irregular surfaces, these machines are especially adapted to the grinding of die clearances, sharpening cutter dies and punches; grinding cams and finishing hardened steel parts.

Features include a collet chuck, permitting easy removal and insertion of grinding wheels, and providing true running of wheels; a built-in diamond wheel dresser to keep wheels sharp and true; a compound tilting mechanism which tilts work table 30° to front and 15° to side, and permits a wide range in grinding compound curves and angles; vertical adjustment of 31/4" which permits using and dressing mounted wheels



up to this height. Two models, Standard and High Speed, for mounted stone and high speed carbide wheels respectively, differ only in spindle speed. Write for complete data to:

Rice Pump and Machine Co. 1025-B S. 40th St. Milwaukee 4, Wis.

# You Need Only 1 DORMAN TAPPER

#### **AUTOMATIC REVERSE**

... instead of 3 ordinary tappers to tap No. 2-56 to 3/4" in steel!

#### Plus Additional Advantages

- No Collets to get lost or need replacement.
   Floating Chuck Jaw and Adjustable Friction Drive to prevent tap breakage.
   No Pressure required to operate, makes a perfect
- thread (class 4 fit) possible. 4. Compact, Light Weight Aluminum Housing, occupies
- absolute minimum for tap capacity.

  5. Furnished with Quill Clamp for rigidity or M.
  Taper Shank for quick change.

  6. Low Price—No. 1 Size M.T.S. \$44.00.

#### LARGER SIZES \_\_\_ POSITIVE DRIVE

2-A Cap. % " to % " in Steel. 3-A Cap. % " to 1% " in Steel. 4-A Cap. % " to 2" in steel incl. pipe taps.

ALL UNITS EFFICIENT AS PRODUCTION THREADERS USING

ROUND SPLIT . BUTTON . ACORN DIES

Write for Bulletin

WORKS 40 S. Mac Questen Parkway, Mount Vernon, N.

#### NEW B & S SURFACE GRINDING MACHINES WITH AUTOMATIC LUBRICATION

Adapted to very dusty or severe operating conditions, two new surface grinders have been announced by Brown & Sharpe Manufacturing Co. The new units, Nos. 2L and 2LB have full automatic lubrication provided for all moving parts and surfaces, and the table sliding surfaces are completely guarded from abrasive dust.

The No. 2L Surface Grinder, illustrated at the right, has automatic feeds, and the No. 2LB has hand feeds only. Both are offered with drive from motor in the base, or with motorized spindle.

The capacity of both units provides a grinding length of 18", width of 6", and  $9\frac{1}{2}$ " height, using a 7" diameter wheel. The vertical adjustment of the wheel spindle slide is 10". The maximum longitudinal table travel is 20"; maximum transverse movement is  $6\frac{1}{2}$ ". The work table measures 46" long x 8" wide, with an actual working surface of 18" x 6"; it is provided with three T-slots,  $\frac{1}{2}$ " wide. Table is 40" from the floor.

The spindle is a removable unit type. Both plain-bearing and anti-friction bearing spindle units are available. The spindle speed at full load is 3200 r.p.m. (2750 r.p.m. optional when specified) when driven by the motor in the base; a speed of 3450 r.p.m. at full load is available when driven by 60-cycle direct-coupled motor on back of spindle head.

The spindle and table of the 2L automatic unit is driven by an endless



fabric belt from a 1½ h.p. motor enclosed in the base. A weighted idler pulley maintains proper tension in the spindle belt, regradless of the height of the wheel spindle. When the motorized spindle is used, the spindle is driven by a 1 h.p. motor mounted on the back of the wheel spindle slide, and coupled directly to the spindle. The table is driven by an endless fabric belt from a ¼ h.p. motor mounted on a swinging bracket in the base; the motor's weight maintains the correct belt tension.

On the 2LB manual feed unit, the drives are the same, except that the

#### NO BUSHINGS, GUIDES or PILOTS NEEDED! THE READING BROACH KEYSEATER

The Reading Bench Machine requires no bushings, guides or pilots. No other machine like it. Very fast—capacity from 1/4 to 3/4 cutter.

Low first cost-prompt delivery.

READING MACHINE COMPANY, Reading (Cincinnati), Ohio



table feeds are manual. Complete specifications on both units will be furnished by the manufacturer. Send for 4-page, 2-color bulletin to:

Brown & Sharpe Mfg. Co., Dept. BB Providence 1, R. I.

#### PRECISION MICROMETER HEIGHT GAGE

A fast, accurate micrometer height gage which both reads and operates like a micrometer has recently been introduced by Metal Items Co. This useful instrument assists in making rapid layouts, and is equally versatile for gaging applications. It is a compact device, easy to handle, and especially convenient in small working areas. The use of a Mikro Marker saves time, and eliminates the need of a height gage.

The instrument is easy to read; it is provided with large graduations with a micrometer reading range of from zero to one inch, in thousandths. There is no vernier to read. The operator sim-



ply turns the dial of the Mikro Marker to the desired dimension, positions the marker, and locks it. No attachments are needed for this simple, self-contained device. For complete information, write:

Metal Items Co., Dept. BB 820 Sixth St. Racine, Wis.

# OLD TOOLS MADE NEW with NU TANGS at a FRACTION of NEW TOOL OF NEW TOOL COST. Exclusive NU-TANG process to

NO WELDING! NO SLEEVES!

NO SHORTENING! NO DISTORTION!

GUARANTED STRONG AS NEW!

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We return them like this



replaces twisted or broken tangs on any tool with a Morse taper (sizes 2 to 6). Any tool—drills, reamers, countersinks, cutters, drivers—repaired perfectly with brand new tangs. Amazingly low cost. Satisfaction guaranteed. NU-TANGS are used by leading industries. Send tools for prompt repairs—or write for prices and literature.

† Patent Pending

NU-TANGS INC. 4108 Spring Grove Avenue

"The Production Super Ordered a Three-Way Improved Lapping Compound"



TIMECUTTER is the new pre-mixed, readyto-use lapping compound that fulfills the demands of production men who want to lower time consumed by the "lapping-in" process. These three improvements do it:



**CUTS** hardened steel TWICE AS FAST as ordinary compounds. Proved by test.



**CLINGS** to the points of contact and really grinds. Does not roll or squirt away.

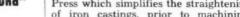


WASHES off easily in a sludge. The silicon carbide is carried away quickly and cleanly.

WRITT for full information should three-way improved TIMECUTTER

TIMESAVER PRODUCTS CO.

546 W. Washington Blvd. Chicago 6, Illinois



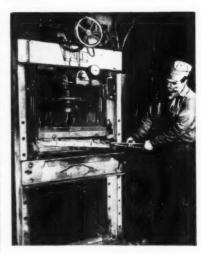
Dake Engine Company announces their new Model 50HE Elec-Draulic Press which simplifies the straightening of iron castings, prior to machining. and reduces distortion losses. The new press is equipped with special straightening dies in which distorted castings are placed immediately after their removal from the normalizing furnace. It is claimed that the use of this press reduces rejects to 2%.

NEW DAKE PRESS EXPEDITES

STRAIGHTENING OF IRON CASTINGS

The new press has a production capacity of 400 castings per day, averaging 1.6 minutes per casting. A quickacting release valve which eliminates the time-consuming turning on and off of a motor for each pressing operation, lends speed to the straightening pro-

cedure.



Other features include an adjustable safety valve to protect against overload; variable-speed ram; movable workhead; an eye-level height pressure gauge; adjustable table; auxiliary screw-type ram. Two auxiliary return springs assure the rapid return of the upper half of the die.

For complete information, write:

Dake Engine Co., Dept. BB Grand Haven, Mich.



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#### added production...without adding brick and mortar

When a comptedier talks about investment cost necessary to increase the production of machined parts, maybe he is figuring in the cost of increased floor space, too.

Of course, you know that Acme-Gridley Automatics often double the production of an ordinary machine without taking up any more space. But it might help to remind him that the new Acme-Gridley Automatics may make even more floor space available in your present plant—that it is not unusual for one new Acme-Gridley to replace two or even four older machines.

Perhaps you will want to have some facts and figures to back up your story. Below is a typical certified case study. Would more of these—on 4, 6 or 8 spindle Chucking Automatics—help you? They're yours for the asking.

CUT THIS OUT FOR USE WHEN YOUR COMPTROLLER WANTS PROOF

#### AN ACME-GRIDLEY CERTIFIED CASE STUDY

MACHINE—Acme-Gridley 12" RPA 6 Spindle Chucker

PART-6½" Diameter Heat-Treated Malleable Casting

MACHINING TIME—For 18 operations, with tipped tools—one fifth of former method

Two Acme-Gridley 12" RPA 6 Spindle Chuckers now complete this part in one handling, doing the work of 20 obsolete machines they replaced—and reducing cost per piece by more than 70%.

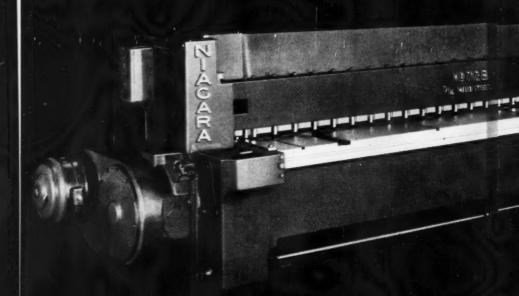


ACME-GRIDLEY BAR and CHUCKING AUTOMATICS built in 4, 6 and 8 spindle styles, maintain accuracy at the highest spindle speeds and fastest feeds modern cutting tools can withstand.

THE NATIONAL ACMS COMPANY
170 FAST 121-1 STREET - CLEVELAND S. OHIO

# 70 YEARS of

TALENT and EXPERIENCE Behind the DEVELOPMENT of



NIAGARA MACHINE & TOOL WORKS . BUFFALO 11, N.Y.

NIAGARA

America's Most Complete Line of

PRESSES
SHEARS
MACHINES
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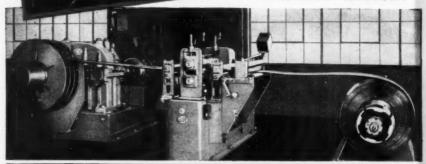
• Whether you are doing your own slitting, or are depending on others for slitting service, your slitting cost will be greatly reduced when you invest in a Yoder slitter of the latest improved design. These slitters embody many new features insuring greater accuracy, speed and ease of operation. Because of their sturdy design and trouble-free operation, with a minimum of care and attention, Yoder slitters are making friends everywhere. Slitting tolerances can easily be held within .004", plus or minus, or even less.

Because of high production potential in relation to first cost and operating cost, Yoder Slitters have an exceedingly low break-even point. They usually become profitable when operating only 5 days per month. On only 500 tons per month, they will often repay the initial investment within the surprisingly short time of 100 days.

Although not the lowest in first cost, their mechanical excellence has made Yoder slitters the choice of discriminating users everywhere. Sales for several years have exceeded, by a wide margin, those of any other make.

Literature, Estimates, Recommendations for the asking,

THE YODER COMPANY
3509 WALWORTH AVE. CLEVELAND 2, ONIO





ROLL FORMING, TUBE MILL AND SLITTING MACHINERY

41 YEARS' LEADERSHIP . COILING . SLITTING . FORMING . EMBOSSING . CURVING . WELDING . CUTTING-OFF

#### INGENIOUS SAFETY CHIP REMOVER GUN

A safety device which has wide application in machine shops and industrial plants is the Safety Chip Remover Gun, a development of the Brown Engineering Co.

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The gun operates best under not less than 70 pounds of air. After the air pressure hose has been attached, the operator simply presses the muzzle of the gun firmly over a tapped or drilled hole, at the same time turning on the air valve in the back of the gun. Grease, dirt and chips will disappear like magic under the velocity of this simply operated device. The gun can be used in a variety of locations, such as with radial drills, wash tanks, and burr benches. The unit has been designed so that the operator can reach into inaccessible places. The flexible hose provides a wide working arc for the gun to operate in.

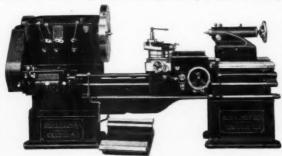
The air valve is set on the back of the gun for the purpose of reaching into locations which the operator finds necessary to clean. For complete specifications on this useful item, write the manufacturer:

Brown Engineering Co., Dept. BB Pekin, Illinois.

### **NEBEL Removable Block Gap Lathes**

furnished in the

Geared Head Motor Driven Type, 3 Step Cone Double Back Gear Belt Driven Type or with Motorized Headstock. Especially adapted for repair and maintenance as well as for general manufacturing. Handle a large variety of work with large swing through the gap.



All Geared headstock type completely equipped with Timken Bearings, with motor mounted on rear of lathe. Quick change gear box, compound rest, steady rest, chasing dial, face plate, driver plate, wrenches, tool post and centers.

Furnished in four different sizes as follows: Series "LN" 18/27", Series "AN" 20/30", Series "B" 22/23, and Series "D" 25/40".

> Write for Circular Giving Complete Information

# -THE NEBEL MACHINE TOOL COMPANY

#### **NEW! INDEXING FIXTURE**



Here is a new G & H fixture which can be used horizontally or vertically . speeds precision machining. 2, 3, 4, 6, 8, 12 and 24 indexes set on

one index plate. Capacity 0 to 1/2". Write for full details.

G & H MFG. CO.
327 ELM STREET, FITCHBURG, MASS.



AIR-WAY PUMP & EQUIPMENT CO.

Since these cutters are made of a

#### NEW SEVERANCE CARBO-MILLS HAVE WIDE APPLICATION

The Severance Tool Co. introduces a new series of Carbide Cutters, known as "Carbo-Mills". They have 1/8" diameter shanks and are made of solid Carbide in one piece, the cutting heads and shanks being integral.



There are twelve different shapes in this series which have been chosen as covering the widest range of applications for this size mill. These Carbo-Mills are useful for the production deburring and machining of parts made from materials that are abrasive, or tough, or having hardness ranging up to 60 Rockwell "C".

single piece of Carbide, their construction simplifies the problem of balance at high speeds, enabling delicate, precise work to be accomplished in close, exacting operations and on intricate patterns. These tools can be reground many times at low cost, giving results comparable to new tools each time they are ground. More information about these new Carbo-Mills can be obtained by writing to:

Severance Tool Industries Inc.

Severance Tool Industries Inc. 722 Iowa St., Dept. BB Saginaw, Mich.

#### INTERNAL MEASURING DEVICE FOR OUTSIDE MICROMETERS

Rimat Machine Tool Company announces an improved model of the Microdapter—the attachment for outside micrometers that permits taking precision internal measurements. Operation is easy even in ordinarily inconvenient or inaccessible locations. Since





# CHASERS

STANDARD:

OR MADE TO YOUR SPECIFICATIONS

To Fit All Types of Die Heads

QUALITY CHASERS Sell For Less

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OFFERS YOU:

- 1. Master Workmanship.
- 2. Top Performance.
- 3. Longer Threading Life.
- Standard sizes from stock.
   Specials on good delivery.

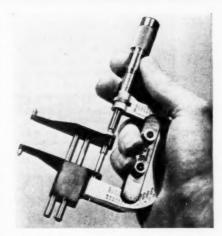


CHASER CO.

24000 Stephenson Hwy HAZEL PARK, MICH.

the measuring points are cone shaped and project beyond each leg, they reach into internal grooves and recesses, behind shoulders, and in deep bores. The attachment clamps securely to any micrometer frame; measurments are read directly on the regular thimble with original micrometer accuracy. A pre-set zeroing adjustment matches distance between tips with micrometer opening. Once set, measurements may be duplicated with any micrometer.

All steel construction and skilled workmanship assure rigidity at the tips, resulting in high sensitivity to "feel". When measuring grooves, behind shoulders and similar locations having restricted openings in the workpiece, withdrawal of the tool is possible without altering the micrometer reading. The legs are manually compressed and withdrawn, returning to their original position when released. Micrdapters are available in stock sizes for 1" micrometers covering a range of ½" to 1"; for 2" micrometers covering 1" to 2" and for



3" micrometers covering 2 to 3". Literature is available upon request to:

Rimat Machine Tool Co. 1117 Air Way, Dept. BB Glendale, Calif.

# FREE SAMPLE BLUE LAYOUT DOPE

Speeds layout on all metals. Drys fast. Oil resistant. Won't chip, crack or flake off. Comes in handy 8 oz. brush-in cans, pts., qts., drums. Order now!

TAMMS SILICA COMPANY 228 N. LoSalle St., Chicago 1, III.



#### OUR EFFICIENT TOOL DESIGNING

#### means better production at a lower cost

Efficient tool designing in post-war's competitive production is a "must". Our experience guarantees you tools—designed for economy of operation, resulting in your increased production at lower costs.

# COLUMBUS DIE • TOOL

930 CLEVELAND AVE., COLUMBUS O ONIO,

## DIAMOND

- · Tools
- · Wheels
- Powder
- Hones



#### BUEHLER WET POWER GRINDERS

The AB Wet Power Grinder, recently introduced by Buehler Ltd., is a general purpose unit which may be used for dressing, touch up, or the rough flat form grinding of standard tools or small parts by hand. It carries two wheels which are available in a variety of grits.



Its major advantages include:

- 1. Speed of obtaining the desired size or shape. The tool bit or part need not be removed from contact with the wheel for fear of drawing the temper. No dip in a quench pot is required, therefore grinding can be uninterrupted. The wheels are bathed continuously in a clean spray of water or water soluble oil from a recirculating unit equipped with a series of slow motion spill-over type settling tanks. The tool bit or part need not be removed from contact with the wheel for inspection purposes.
- 2. The quality of the grind is easily maintained. Continuous cooling of the wheel and work by forced spray keeps loaded metal washed out. The wheel tends to cut rather than burnish. A diamond dressing attachment (optional) with micrometer adjustment makes possible a close control of wheel flatness. The wheels are steel backed, minimizing vibration.
- 3. Safety in operation. The wet wheel and its surrounding moisture laden atmosphere prevents the formation of dust hazards. Dust poisonings or allergies are minimized when the correct coolant is used; magnesium may be ground without danger of fire or ex-

plosion. The wheel is exposed only on the flat grinding surfaces. Safety glass visors and built-in lighting give practically complete eye protection.

The grinders are available in two models, the No. 1212-AB, a floor mounting model which includes a welded steel pedestal with a built-in recirculating cooling device, and storage compartments for wheels and tools; the No. 1211-AB, which has the same features as the larger unit without the pedestal and built-in cooling device. For complete specifications, write for six-page illustrated bulletin to:

Buehler Ltd., Dept. BB 165 W. Wacker Drive Chicago 1, Ill.

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#### SIX SOCKET SCREW WRENCHES IN ONE

The problem of finding the right hex set screw wrench at the right time has now been solved with the Hex-Uni-Key. This compact tool, small enough to carry in the pocket, consists of six sizes of set screw wrenches anchored in a cast holder.

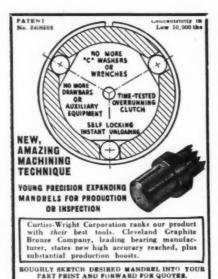
The wrenches are hardened and heat treated for long life. Anchoring is done by a special deforming process to give plenty of leverage and prevent twisting or loosening. The wrench handles all types of socket set or cap screws in



the six most popular sizes. Wrench sizes are clearly marked on each side of the cast holder. Write for details to:

Eklind Tool and Mfg. Co. 2627 N. Western Ave., Dept. BB Chicago 47, Ill.







OUNG ARBOR CO. . PH. TOwer 1-3076

Cleveland 13, Ohio

2140 Seranton Road



BLIND HOLE BOTTOMING Many enthusiastic users report that the Behr Boring Bar actually pays for itself in the first four weeks of operation. Just ask the man who uses one. This new patented bar is chatter proof, extremely accurate and ultra efficient. Has interchangeable blades and accessories.



for versatility and efficiency. Can You Afford NOT to Get the Facts?

Trade Mark

WRITE FOR CATALOG TODAY

BEHR

unequalled

**Products Company** Warren, Michigan

#### AMERICAN CYANAMID DEVELOPS RESIN CORE BINDER

The Plastics Department of American Cyanamid Company has introduced a new synthetic resin developed for the binding of sand cores. This new resin is the result of extensive research and will be marketed under the trade-name of Cycor 151.

It is a neat, thermosetting resin especially prepared as a water resistant foundry core binder. It contains no filler nor additives. The foundry may vary the amount of Cycor 151 and additives to obtain cores with green and baked tensiles, permeability, hardness and collapsibility necessary for the type casting to be made. Its use also makes possible cleaner, more uniform castings.

Cycor 151 produces water resistant cores which withstand high humidity and long lav-overs in molds. It can be cured in either conventional or dielectric ovens and allows quick-cured cores for rush jobs. Because Cycor 151 is a pure resin, only small quantities are required; the user purchases only the neat synthetic resin, modifying it with fillers and extenders to meet his own special requirements. The short baking cycle required increases oven turnover and thus increases production per hour. Cycor 151 gives foundries 33% to 50% faster baking time than old-time binders at baking temperatures of only 350° F. The excellent collapsibility insures savings in shake-out and cleaning.

American Cyanamid's technical service men are available to assist the user in order to help him achieve satisfactory results and economies.

American Cyanamid Co., Dept. BB 30 Rockefeller Plaza New York 20, N. Y.

#### NEW WALL CHART FOR SELECTING WHEEL DRESSERS

The "Desmond Dresser Guide to Better Grinding", a convenient 9" x 12" wall chart illustrating and describing the selection and application of grinding wheel dressing tools has just been published by the Desmond-Stephan Manufacturing Co., Urbana, Ohio. It illustrates the various types of dressers for different applications of dressers to various types and sizes of grinding wheels, giving the model and size numbers of Desmond Dressers to serve particular wheel diameters and faces. Copies of this guide are obtainable from industrial distributors or on request direct from the manufacturer. Write for the "Desmond Dresser Guide."

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tes 949 NEW INDESTRUCTIBLE 6 FOOT FOLDING RULE

A new white enamelled 6-foot folding rule, made of special hardened and tempered alloy steel has been introduced by Durall Tool Corporation. It can be bent and twisted like a pretzel and will always spring back to its normal shape. The rule weighs 3-1/5 oz., 20% less than the average good wood rule. It is very versatile; it can be used to take inside measures; measure pipes, rounds, and pulleys; as a straight edge to draw lines on paper or boards. It extends rigidly for out of reach measurements.

The Indestructible Durall Rule can be opened up on the job and left open while working; accidently stepping on it will do no damage, since it will not bend or break. The rule is uncondition-



ally guaranteed . . . "We guarantee to replace, or refund full purchase price if the Durall Folding Rule breaks or if the joint wears loose or proves unsatisfactory for any reason." Write for information to:

Durall Tool Corp., Dept. BB 117 Woodworth Ave. Yonkers, N. Y.



#### CHANNEL FLUSHING FOR DUAL CHAMBER FURNACES

"Channel Flushing," a new development in induction melting furnaces, is announced by the Fisher Furnace Division of Lindberg Engineering Co. It is a further development of the Lindberg-Fisher 2-chamber induction melting furnace announced by the company in 1947. "Channel Flushing" keeps the channels between the two chambers free of slag or oxide accumulations. With "Channel Flushing" the primary coil of the furnace transformer is located in such a manner as to cause a greater volume of molten metal to be impelled into one chamber than the other. This raises the molten metal level in one chamber, and lowers the level in the other. Every 60 seconds, when the power is cut off, the higher level subsides, and the molten metal flows to the other chamber until the same level exists in both chambers.

When the current is restored, the molten metal is forced in the opposite direction, again causing a higher level in the one chamber than the other.

The furnace control equipment automatically interrupts the power once a minute, thus the "Channel Flushing" takes place twice a minute,— once in each direction. The flushing that occurs when the power is interrupted is

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the more important, since impurities are released from the magnetic field surrounding the channels that connect the two chambers.



The constant flushing and stirring action insures metal of uniform analysis and also causes a beneficial fluxing action.

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Available on request is a reprint of a magazine article describing how a user of this furnace improved quality, increased production, and reduced costs. Write:

Lindberg Engineering Co., Dept. BB 2444 W. Hubbard St. Chicago 12, Ill.

#### NEW UNIVERSAL DIAMOND TOOL

The development of a new universal diamond dressing tool is announced by Diamonds and Tools, Inc. This tool, the IC-4, is designed for both rough and finish dressing or truing on surface, cylindrical, or centerless grinders. It will perform economically on all bond hardnesses of either aluminum oxide or silicon carbide grinding wheels.

Universal in its uses, it is also comparatively fool proof from the human

element standpoint. An inexperienced or careless operator can do little damage to the tool thruogh improper use. This dresser employs the use of numerous small solid diamonds evenly distributed throughout a special Colmonoy wear resistant matrix. These small diamonds will produce a sharp cutting edge, due



to their small cross section. The tool does not require resetting and can be used up completely without removal from the grinder. Write for information to:

Diamonds and Tools, Inc., Dept. BB 19345 John R St. Detroit 3, Mich.

# NOTCHING TUBING OR PIPE ENDS EASILY WITH

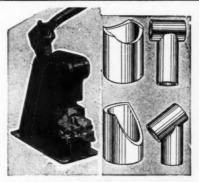


# IN POWER PRESS

Are-Fit is a notching unit for preparing pipe or tubing ends in making welded or brazed tubular joints. Are-Fit will prepare the ends of a pipe or tube in less than 5 seconds. Are-Fit is a production tool that will cut your production costs. It is applicable in any industry where pipe or tubular construction is used..

- Arc-Fit can be utilized in any power press.
   Arc-Fit can be furnished for any size tubing
- or pipe.

  A hand press can be supplied with Arc-Fit units for shearing pipe or tubing sizes 2 inches or under.



- For sizes over 2", angular cuts other than 90°, and slotting operations. Quotation furnished on request.
- Are-Fit does not deform pipe or tube. No grinding or finishing operation is needed.
- Engineers can now design for tubular construction and cut costs.
   Write today for circular and prices.

OGEL TOOL & DIE CORPORATION

2525 Moffat Street

Chicago 47, Illinois



#### SELF-WINDING BALANCE REEL FOR PORTABLE TOOLS

Aero-Motive Manufacturing Company announces the addition of a 20-pound Balance Reel to their line of portable tool reels and electric cord reels. The new device is a self-winding reel that suspends portable tools for use on the production line, and raises them out of the way when they are not needed.

Known as the Zoo "Self-Winding" Balance Reel, it speeds production and reduces fatigue by keeping such tools as power screw drivers, nut runners and drills always within instant reach of the worker for easy use. It helps keep costs down by eliminating accidental dropping and other rough handling of tools.

The Zoo "Self-Wind" Balance Reel is hung from a beam or a cable in work position above the operator. The power tool is fastened to the end of a 6-ft. cable wound on a drum within the housing. The operator simply pulls the tool down for use when he needs it, raises it out of the way when he has finished the job.

The new unit is provided with twin motor springs for smoothness of action and for safety in case of metal fatigue;



worm and worm gear tension adjustment; separate independent safety cable. The whole unit is of cast alloy con-



Pat. Pend.
PRICE \$5.29 DELIVERED

#### 10 DRAWER CABINET

FOR

DRILLS — REAMERS — TAPS — COUNTERBORES —
COUNTERSINKS — END MILLS — TOOL BITS — INDIA
FILES — DOWEL PINS — TAPER PINS — SMALL SCREWS
— NUTS — SMALL SPRINGS — ETC.

NO. 24 GAUGE STEEL-OLIVE GREEN BAKED ENAMEL FINISH— INSIDE DRAWER DIMENSIONS — 3% WIDE, 1% HIGH, 7% LONG — COMBINATION DRAWER PULL & LABEL HOLDERS — RUBBER FEET

CRESTE METAL PRODUCTS COMPANY, INC.

STEGER, ILLINOIS

How to remove burrs - FASTER BETTER

new NOBUR tool you can burr holes faster-improve

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the finish of deburred parts and lower pro-

duction costs by eliminating burring as a bench

operation. The NOBUR tool works like a drill, making burring a fast, easy machine operation. The NOBUR tool is available in 1/16" progressive sizes from 3/16" to " in diameter. Write today for new complete burring folder.

#### NOBUR MANUFACTURING COMPANY 717 North Victory Blvd.,

Burbank, California



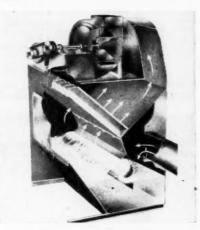
struction and carries sealed in lubrication. For complete details, write:

Aero-Motive Manufacturing Co. Kalamazoo 24, Mich.

#### REDESIGNED DUST CONTROL AND COLLECTION UNIT

The Type N Roto-Clone, used for the collection and control of dust generated in manufacturing and process operations, has been re-designed to permit wider application and improved performance. The unit is a hydrostatic precipitator that cleans the air by the combined action of centrifugal force and an inter-mixing of water and dustladen air, re-using the water without recirculation pumps or spray nozzles.

The new Design 2 Type N Roto-Clone, with capacities through 48,000 c.f.m. maintains a lower pressure drop with the same cleaning efficiency and water recirculation rate, and can be operated from 50% to 120% of its nominal rating without affecting its collecting efficiency. All sizes are available in either manual clean-out, sludge ejector or hopper bottom arrangement. Bulletin No. 277-A issued free upon request. write:



American Air Filter Co., Inc. Lousville, Ky.

#### For over 30 years the leader in the field

**OPERATOR** CAN TEND 4 TO 8 MACHINES

HIGH SPEED SHAVER, equipped with automatic feed hopper, handles most types of headed parts. Greater flexibility, speed, precision for secondary operations. WRITE FOR FULL INFORMATION giving your specifications.

99 BROOK STREET, ELMWOOD, CONN. Manufacturers of Riveting and Screw Machines



COOLING

#### ANTI-FRICTION COMPOUND

In White Powdered Form



#### SERVING INDUSTRY FOR 35 YEARS

- Cools hot bearings
   Solves toughest lubricating problems
- Saves wear on moving parts
  Works wonders with cutting oils
  Packed in 5-10-25-50-100 lb. containers. Write for Free Sample.

SCIENTIFIC LUBRICANTS CO.

3469 N. Clark St. Chicago 13, III.

#### STERLING DRILL GRINDER



McDONOUGH MANUFACTURING CO. EAU CLAIRE WISCONSIN, U. S. A.

#### NEW G. E. MOTOR CONSTRUCTION KITS

A new line of fractional h.p. motor construction kits for use as teaching aids in school shops and laboratories has been announced by the Educational Section of General Electric's Apparatus Department.

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Each kit contains the necessary components, completely machined for assembling a full size, regulation motor; including stator and rotor cores, bearings, starting switch, capacitor, shaft, frame, end shields, etc. Wire and varnish are not included in the kits because these can be inexpensively obtained locally. The illustration below shows the unassembled parts which are included in the kit.



The kits are available in four sizes: 1/4-and 1/2-h.p. single-phase capacitorstart type; ½-h.p. three-phase, and a d-c unit suitable for use as a 300 watt generator or 1/2-h.p. motor.

Several preliminary models of these kits have already been delivered to the San Diego Electrical Club for use in a club-sponsored contest among school chidren. For complete details, write:

General Electric Co., Dept. BB Apparatus News Bureau Schenectady 5, N. Y.

#### **COLLARED BUSHINGS FOR KEYWAY** BROACHES

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The du Mont Corporation now offers "Minute Man" Collared Bushings in sizes from 1/4" to 1-9/16" at slightly higher cost than regular bushings. Larger sizes are also available on special order. This new Collared Bushing facilitates locating the broach in the bushing, and



makes it unnecessary to locate the base of the bushing on the arbor press plate. The collar also prevents the bushing from dropping through the bore after the broach has been pushed through. Write for details to:

The du Mont Corp., Dept BB Greenfield, Mass.

#### WEIGHT CALCULATOR FOR SHEET ALLOYS

The Dayton Rogers Manufacturing Co., has developed an improved strip weight caculator for determining the overall weight of various sheet and strip alloys, not only including steel, but constants are also provided for aluminum, copper, bronze, lead, zinc, etc.

The device is primarily designed for calculating the overall weight of various sheet alloys in connection with a stamping die practice, and will immediately give the correct overall weight when the width of the strip, and the pitch of the part, or the number of pieces required per inch or foot are

This slide rule calculator may be obtained free of charge upon receipt of request on management's letterhead.

Dayton Rogers Manufacturing Co. 2824 13th Ave., So., Dept. BB Minneapolis 7, Minn.



#### Kellner

The only Perfected clamp for Jig Borers,
Lathes, Milling Machines, etc. Kellner
Precision Clamps eliminate the use of
parallels and clamping blocks. They
do the work better and in less time.
TWO SIZES
For Detailed Literature Write
DEALERSHIPS AVAILABLE

KELLNER MACHINE AND TOOL CO. DETROIT 34, MICH. 18490 MT. ELLIOTT



SPEED UP production in multiple operations with push-out type Hall Collet Chuck. Full spindle capacity or over. Tremendous grip over or under stock size to .007 - without adjustments...no bearings, friction, heat or loss of power. Instant release without stopping lathe.

3-inch capacity, \$145; 3-inch capacity, \$295; 1-inch capacity, \$95 Round, square or hex collets, plain-serrated

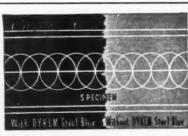
HALL MANUFACTURING COMPANY 622 Tularosa Drive . Los Angeles 26, Calif.



Try Them On Your Next Job!

#### ECONOMY MACHINE PRODUCTS COMPANY

5212 Lawrence Ave., Chicago 30, III.



#### DYKEM STEEL BLUE STOPS LOSSES making dies & templates

Simply brush on, right at the bench; ready for the layout in a few minutes. The dark blue background makes the scribed layout lines show up in sharp relief, and at the same time prevents metal glare. Increases efficiency and accuracy.

Write for full information.

#### THE DYKEM COMPANY

2301G North 11th St., St. Louis, Mo. in Canada: 2466 Dundas St. West, Toronto, Omt.

#### NEW MANUAL TYPE WIRE STRIPPER ELIMINATES WIRE DAMAGE

An improved hand type, pocket size Wire Stripper called the "Stripmaster" is announced by Ideal Industries, Inc. The tool features an automatic cam action that releases the jaws, so that the wire may be removed after stripping, and the crushing of stranded wire is completely eliminated.

The "Stripmaster" is designed for stripping building, fixture or telephone wire, lamp and portable equipment cords (individual conductors) automotive wiring, radio and instrument wire and cable, switchboard and aviation wire, FM and TV down lead wire.

Squeezing the handles grips the wire, cuts the insulation and strips the wire—all in one operation. As the handles are released, the grippers automatically free the wire and the jaws return ready for the next cut. There is no possibility of nicking or cutting the wire or fraying of wire ends.



The handles are comfortably shaped and have a narrow span to fit easily into any hand. Light (10 oz.) weight and gentle pressure enables the "Stripmaster" to be used all day without fatigue. Four models handle all wire gauges from Nos. 22 to 8. A fifth model is designed especially for FM and TV down lead wire. Blades are interchangeable on all models and can be replaced quickly. Manufacturer will supply descriptive catalogue page N-1A upon request. Write:

Ideal Industries, Inc., Dept. BB 1441 Park Ave. Sycamore, Ill.

### NEW MODEL 3-A AIR BACKSTAND

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The Hammond Model 3-A Air Backstand was designed for heavy production grinding or polishing with abrasive belts. This machine is equipped with an air actuated cylinder which automatically maintains correct belt tension—compensating immediately for a fraction of an inch of belt stretch. Various pieces of material require different belt tension; after the correct tension is determined, the operator merely sets the pressure regulator valve.



The Model 3-A is of heavy cast-iron construction except for its stainless steel 12" diameter, 7" face idler pulley. The pulley is diametrically balanced and runs on high quality sealed ball-bearngs.

Descriptive literature on this unit is available. Write:

Hammond Machinery Builders 1614 Douglas Ave., Dept. GP-16 Kalamazoo 54F, Mich.



### WHITNEY- JENSEN PRODUCTS

Nos. 10-11-12



### BALL BEARING PUNCHES

CAPACITY - 3/8" THRU 1/4"

PUNCHES and DIES 3/32" THRU 1/2" BY 1/64" VARIATION

HANDY FOR MAINTENANCE

Write for Literature

WHITNEY METAL TOOL COMPANY



Simplify and Speed up those high production Assembly jobs.

A complete line of production type screw driving machines for every application.

WRITE FOR

COOK & CHICK CO.



### FIXED CENTER OIL CIRCULATION HEAD

This oil circulating head has been designed mainly for high speeds, although it is also used for large cluster boxes on way type machines. The 34-spindle in 6" square head, illustrated, has been operated successfully at 10,000 r.p.m., generating very little heat.

The head is designed to eliminate oil seals and other rubbing parts; it is fully ball bearing equipped. Idler shafts are mounted on ball bearings at each end of the shaft. The ball bearings used on the spindles are of the angular contact type, which holds the runout at the end of the tool to a minimum, and also has high tool thrust capacity.



The head contains an oil pump with a built-in, vane type pump, which impels the oil to the top of the head and by centrifugal force spreads over its entire upper surface, then cascades down over the bearings and gears. This new device is claimed to be especially adaptable for high speed sensitive drilling machines. The castings are made of high-grade aluminum alloy. All spindles and shafts are alloy steel, properly heat-treated and ground.

For further information, write:

U. S. Drill Head Co., Dept. BB 616 Burns Ave. Cincinnati 4, Ohio

### JAKOBSEN SURFACE GRINDER FOR SMALL PARTS

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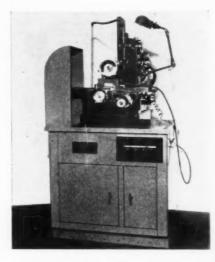
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A new sensitive surface grinder especially designed for tool makers and small parts grinding has been developed by the Jakobsen Tool Company. This grinder is so sensitive it splits tenths, yet it can also be used for heavy roughing. One outstanding feature is its variable wheel speeds, which give maximum flexibility. The unit grinds with wheel diameters from 1/16" to 5" or more. Incorporated in the grinder is a coolant system, which provides throwing the coolant on the work from almost any angle.

All parts of the grinder which are exposed to wear, all ways, gibs and lead screws, etc., are hardened and ground high-carbon high-chrome steel, and are generously proportioned and fully protected by dustproof and water-proof guards.



Full details and specifications are incorporated in a folder available from the manufacturer, Write:

Jakobsen Tool Co., Dept. BB 277 Glenwood Ave. Bloomfield, N. J.





### INDUCTION HEATER HEATS 750 FORGING BLANKS PER HOUR

Delivering a 2½" x 3-15/16" steel blank every 4.8 seconds right to the mouth of the forging machine, with every blank at a closely controlled 2200° F., this new Ajax-Northrup heater announced by Ajax Electrothermic Corp., permits the operator to flip the billets into the dies at high production rates without extra steps or conveyor systems.



Because of its fast, scale-free heating, this new heater reduces rejects, and permits cleaner forgings. Since it heats so fast, there is little time for scale to form. It reduces down time required to clean out dies. The freedom from scale also lengthens die life.

Blanks are fed into a chute at the far end, from which they are automatically fed into the heating coil by a hydraulic pusher. As each cold billet is pushed into the far end, a hot billet is pushed out at the press end.

Timing is fully automatic. With close control over both the timing and the power input, most production schedules can be accurately paced by the Ajax-Northrup heater.

The unit can handle a wide variety of forging blanks. With simple adjustments, it can be set to heat any length of slug up to the maximum stroke of the ram. The heaters shown in the picture will accommodate square or round billets up to  $2\frac{1}{2}$ " dia.

The power source is a 700-kw., 960cycle motor generator unit, of which 100 kw. is held in reserve for larger billets or for a shorter timing cycle. Complete information will be sent upon request to:

Ajax Electrothermic Corp. Ajax Park, Dept. BB Trenton 5, N. J.

### STEEL BLUEPRINT CABINET

A new blueprint cabinet, built of heavy gauge furniture steel has been introduced by the Cole Steel Equipment Co. The cabinet contains five smooth gliding drawers on ballbearing rollers, and five drawer units can be securely stacked to meet individual requirements. These cabinets are also available with an automatic plunger type lock controlling all five drawers. The lift compressor in the front of the drawer and the hood in the rear prevents the material filed from curling, creasing or tearing.

Uses for the Blueprint Cabinet include storage of artwork and photographs, blueprints, maps and plans, etc.



Two sizes are available: one with inside drawer dimensions, 37" wide, 25" deep and 2½" high; and the larger one with inside drawer dimensions, 43" wide, 32" deep and 2½" high, finished in olive green and Cole gray. Write for prices to:

Cole Steel Equipment Co., Inc. 285 Madison Ave., Dept. BB New York 17, N. Y. ycle. ipon

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in-25" one 43" shed

shed for

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REICH 3-WAY
PRECISION TEST INDICATOR

Lifetime conical bearings, stainless and non-magnetic. Sturdy construction. Needs no service or adjustment. .014" reading.

Price \$6.50 Write for folder

J. R. Reich Manufacturing Co. 45 E. Stroop Rd., Dayton 9, Ohio

### DIVIDING HEADS



3 SIZES - 4 MODELS - 6" to 12"
TROYKE MFG. CO.
4422 APPLETON ST. CINCINNATI 9, 0.



### WADE ENVELOPES

protect Shop Orders, Drawings, Blueprints, etc.

Made in three styles, transparent, fibre, and metal backs. Non-inflammable acetate windows. Special style or size to order. Write for details.

### WADE INSTRUMENT COMPANY

Phone: CEDAR 4728 1422 E. 109th St., Dept. H, Cleveland, Ohio Save Space and Lifting

Yohe Handy Rack floor stands take less space, held more steeds and require less lifting. Four arm rack - 51" high stacks, 10,000 lbs. Five arm rack 57" high holds 12,000 lbs. flat er reund stock — at safe lifting heights. Use against wall or back-te-back in center of room.

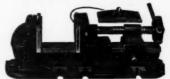
Let us send details and prices WM. S. YOHE SUPPLY CO. 503 Mahoning Rd., N.E. Canton, Ohio



PROMPT DELIVERY
UP TO 12" DIAM. - 3 D. P.
CUTTING ONLY OF COMPLETE GEARS
LATEST GLEASON EQUIPMENT

BG 2013 Eastern Ave.

### GEM VISES



J. E. MARTIN MACHINE WORKS SPRINGFIELD, OHIO

### Get Out Those BROKEN TAPS!

Get 'em out with "WALTON" TAP EXTRACTORS, the inexpensive tools for removing broken taps from all kinds of work. Shop proven; fast; economical. See your jobber, or write us for Folder No. 12 and details of free trial offer.

### THE WALTON COMPANY

Hartford 10,

Connecticut



### NEW QUICK-EXHAUST AIR VALVE

A new auxiliary air valve which enables cylinders to start their return stroke in a split second is announced by Ross Operating Valve Company. The



fast timing is accomplished because the new unit, known as a quick-exhaust or dumping valve, acts as a supplementary exhaust to the regular operating valve. When the latter is in open position and starts to exhaust, it automatically causes the self-operating dumping valve, which is mounted right at the cylinder, to "dump" the exhaust air thus permitting the cylinder to start its return trip almost instantaneously.

This feaure makes the dumping valve useful for close-coupling on machinery where quick cylinder return increases safety of operation and improves performance. It is also adapted for use on equipment where the distance between the operating valve and cylinder tends to slow the exhaust and retard the speed of cylinder operation. The new device offsets the distance factor, since it releases the air right at the cylinder. This new Ross development is available in 3%" through 1" pipe sizes.

For further information, write:

Ross Operating Valve Co., Dept. BB 120 E. Golden Gate Ave. Detroit, Mich.

# Air Operated ROTARY WORK FEEDER



Deftiy, holds and delivers small parts to drill, tap, swage, stake, etc. Stations accurate to .002". Guaranteed against over-travel or "skipping". Indexes as slow or fast as you like, up to 10,000 per hour. Compact and sturdy, easy to tool and hook up.

Standard dial plate 10": available in 12". For a new job, simply tool up a new dial. Readily combines with "MEADMATIC" Timer, Air Press, Drill Presses, etc—to make almost completely automatic machine — operator merely loads.

Write For Full Details

MEAD

4114 No. Knox Ave., Dept. YA-59, Chicago 41, III.

### TAYLOR & FENN WET TOOL GRINDER

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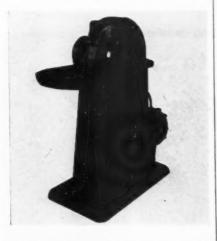
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A new Wet Tool Grinder, equipped with a 20" diameter wheel, has recently been introduced by The Taylor & Fenn Co. This new unit has been constructed to give long, trouble-free service. It is primarily intended for hand grinding and dressing, lathe and planer tools. large diameter drills, and other large cutting tools that must be ground with a wet wheel to prevent burring of he cuting edge. The machine, listed as Model M-20, is especially applicable to shops where such grinding operations are required as a part of every day production.

The grinding wheel spindle is mounted in permanently lubricated and sealed ball bearings. The spindle drive is through dual V-belts, direct from a 2 h.p. motor mounted in the rear. The tool rest is adjustable in order to compensate for tool wear.



Standard equipment includes one 20" x 2½" grinding wheel, coolant tank located within the pedestal, standard voltage motor, starter and switch with necessary wiring. Floor space required for this useful machine is only 24" x 51". For complete operational data, write:

The Taylor & Fenn Co., Dept. BB Hartford, Conn.

PRESENTING THE

FAMOUR PRESS

CUB

POWER PRESS

CUB

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Here's the Famco "Cub" . . . a sturdy press of 3-Ton capacity built in the Famco tradition of "the finest quality for the price." The "Cub" Models 49 (Inclinable) and 48 (Non-inclinable), offer the operating efficiency and performance of larger presses at a minimum investment . . . unquestionably the best buy in the power press field today. "Cub" features include the new Famco non-repeat mechanism, easily set for continuous operation; Oilite bronze bearings; precision ground crankshaft; cast semi-steel frame; and precision machining throughout. Write for details.

FAMCO MACHINE CO. 1320 18th ST. • RACINE, WISCONSIN

famco (CUSTING) machines

ARBOR PRESSES • FOOT PRESSES • POWER PRESSES FOOT SQUARING SHEARS • POWER SQUARING SHEARS

### NEW COMPOUND DEPTH-HARDENS STEEL IN MINUTES

Hardening drills, chisels, dies, taps, cutting tools, or any carbon or high speed steel to any desired depth in minutes is now possible with an amazing new compound called "Hi-Speed-It". It is a recent development of the Wilson Carbon Co.

Ordinary wire nails and common reinforcing rods hardened by this new method can be driven through tough automobile spring leaf with no apparent dulling. In a recent test before engineers of a large railroad, a 11/2" gauge was deep hardened in 3 minutes. It was at once put into an air hammer, in which it cut, without stopping, four strips of 5/16" deep x 3/8" wide x 14" long from a piece of No. 302 Stainless Steel. A 3/16" carbon drill was hardened with "Hi-Speed It" in 32 seconds flat and drilled a clean hole in a 1/4" thick piece of 25 chrome-20 nickel steel. It is not necessary to reharden

The process is quite simple. No special skill nor equipment is required. The object to be hardened is: (1) Heated to a cherry red color in an ordinary plumber's torch or an open forge or furnace. (2) It is then dipped, rolled or stirred in the gray powder. (3) 15 to 30 seconds are allowed for the powder to fuse and form a crust after which the object is again dipped lightly into or sprinkled with "Hi-Speed-It". (4) The object is reheated cherry red. (5) It is then quickly quenched in clean, cold water or brine.

Depth of hardness is controlled simply by repeating the first 4 steps before quenching. High Speed steels are pro-



### SELF-CLEANING PRINCIPLE APPLIED TO ALNICO MAGNET

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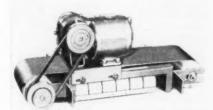
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Automatic separation of magnetic and non-magnetic materials with an Alnico plate magnet has been acheived with the Self-Cleaning Perma-Plate recently developed by Dings Magnetic Separator Co. This permanent non-electric magnet unit is designed to provide automatic protection for crushers, grinders, stokers and other machinery susceptible to tramp iron damage;



to remove contaminating iron from such materials as food, sand, coal, rubber, plastics, etc.; and to prevent fires and explosions caused by tramp iron sparkes in dust laden atmospheres. The unit can be installed over conveyor belts, spouts or chutes.

The unit consists of a heavy duty Perma-Plate Magnet and a motordriven, endless cross belt. The magnet's force attracts and holds tramp iron to the underside of the cross belt, which carries it to the side beyond the influence of the magnetic field, at which point it is discharged. The magnet incorporated in the unit consists of a series of powerful "C" shaped Alnico magnets, the poles of which are secured to steel plates; the entire assembly is mounted on an aluminum face plate. The device is equally effective with wet or dry materials, and the magnet itself can be completely submerged. The manufacturer guarantees the Perma-Plate's magnetic permanence for the life of the installation. Available in range of sizes to meet every requirement. Write for details to:

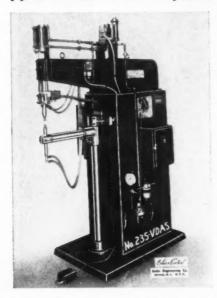
Dings Magnetic Separator Co. 4740 W. McGeogh Ave., Dept. BB Milwaukee, Wis.



### **NEW EISLER SPOT WELDER**

An improved Press Type Spot Welder operated by a double acting air cylinder, engineered for dependable high speed production, is introduced by the Eisler Engineering Co., Inc.

A prominent feature of this welding machine, shown in the illustration below, is the new solenoid-actuated 4-way air-valve, which controls the air supply to both sides of the air cylinder.



This valve is not only simpler in its design and trouble-free in its action, but is practically noiseless, which makes it superior to the bulky and noisy constructions heretofore used.

The air system also includes an air pressure regulator with indicating pressure gauge, an automatic lubricator and an air filter. The electrode pressure is adjustable.

Heat adjustment is performed by a heat regulator (7 steps on and 1 step off) with dial control, permitting a wide range of materials and thicknesses. High speed magnetic contactor and weld timer control insure uniformly clean, strong welds, even in fast pro-

duction. An electric foot switch initiates and governs the otherwise fully automatic function of the welding machine.

All accessories are mounted on a solid arc welded steel frame, with rear door for easy inspection. The built-in transformer is air-cooled. The electrodes, made of best wear resistant copper alloy of high electrical and thermal conductivity, are water cooled. The electrode holders are adjustable up to 24" opening between arms. Repeating strokes are possible up to 120 per minute.

This type of Spot Welders Series No. 200 is available in sizes from 7½ up to 75 kva. Write for complete specifica-

Eisler Engineering Co., Inc. 750 So. 13th St., Dept. BB Newark 3, N. J.

### NEW KEO DRILL SET

A new drill and countersink set has just been announced by Keo Cutters of Detroit. The set consists of seven of the most popular standard sizes, with outside diameters ranging from 1/6" to 7/16". These Keo drills are made of 18-4-1 high speed steel, with carefully ground flutes providing adequate chip removal. Each set is packed in a hardwood box, with a separate compartment for each drill, and a screw cap.



Keo Cutters also manufacture center drills in sizes up to 34" diameter, as well as complete lines of keyseat cutters, center reamers and lathe mandrels. For further information, write:

Keo Cutters, Dept. BB 19326 Woodward Ave. Detroit 3. Mich.

### OPPORTUNITY

A recently issued patent for a unique hand-operated keyless drill chuck is now available, either for sale or lease. A onethird turn of the tightening sleeve of this device operates a unique built-in mechanism which will equal in strength a key chuck. The drill chuck is sturdy and will stand up under every test,

Address replies to Box BB-10 C/O HITCHCOCK PUBLISHING COMPANY 222 E. Willow Ave. Wheaton, Illinois

### ATLANTIC GEARS precision-cu and inspected, on new, latest equipment. All sizes and types. Send samples or blueprints for quotation. ATLANTIC GEAR WORKS, INC. 198 Lafayette St., N.Y. 12, N.Y.

Phone CAnal 6-1441

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Determines spot temperatures of heat-treating furnaces, fire boxes, kilns and boxes, kilns and forgings accurately— instantly. No ther-mocouples, lead wires or accessories needed. Temperature is recorded on direct-read-ing dial at press of button. Two double ranges.

Write for FREE Catalog No. 100 The PYROMETER INSTRUMENT Co. New Plant and Lab., Bergenfield 3, N. J.





### 60 YEARS' Manufacturing

Multiple Spindle Drilling and Tapping Machines - Automatic Drilling and Tapping Units — Multiple Spindle Attachable Drill Heads — Hot and Cold Swaging Machines — Hammering Machines — Tools, Jigs & Fixtures Contract Work - Special Machinery.

LANGELIER MANUFACTURING CO. PROVIDENCE 7, RHODE ISLAND

Accurate Hole Transfer Made Easy With





Write for Circular NIELSEN TOOL & DIE COMPANY 1962 W. Eleves Mile Road, Berkley, Mich.

### ACROMARK ENAMEL FILLING MACHINE

A new machine that places color enamel filling into stamped, embossed molded, cast and die cast parts and



products has been developed by Acromark engineers. Some examples of hub caps being color filled are shown in the illustration.

The design may be flat, curved, concave or convex, since with the new enamel applicator built into this machine, the enamel can be applied to various contoured surfaces as well as flat.

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By hand operated mechanical means, the enamel is carried from a platen shaped to match the surface being filled by means of a molded synthetic rubber die that is molded in a metal die to exactly match the design. Allowance for enamel flow as the enamel is applied is provided in the die, and a depth of application adjustment of the machine insures a good result even when the machine is operated by unskilled help.

This machine is stated to eliminate the need for laborious hand filling; it is designated as Acroprinter No. 301. Larger and completely mechanical filling machines can also be furnished

The Acromark Co., Dept. BB 15 Morrell St. Elizabeth 4, N. J.





OHIO, U.S.A.

### AETNA ACETYLENE CYLINDERS

Details of a new line of acetylene cylinders are announced by Aetna Cylinders, Inc., newly established Detroit firm.

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These cylinders have a monolithic filler which permits not only faster filling but more gas capacity. This, combined with their lighter weight, enables the manufacturer of compressed acetylene to effect considerable savings—both in labor and trucking and shipping costs.

Aetna cylinders are available at present in four sizes—39" x 12", 30" x 10", 30" x 18 and 24" x 6". The cylinders are equipped with a top quality valve—with either Prest-O-Lite type, or commercial fittings. Caps can be supplied with cylinders when required. All Aetna cylinders have five safety plugs and are manufactured in strict conformance to I.C.C. specifications.

Complete information can be obtained from the manufacturer:



Aetna Cylinders, Inc., Dept. BB 714 Fisher Building Detroit 2, Mich.

# TOOL ADJUSTMENT TIME ELIMINATED!

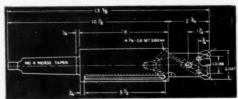
WITH SPECIAL ERICKSON-STATE BORING BAR

Leading Automobile manufacturer has eliminated need for costly tool adjustment at machine on connecting rod boring job, thanks to a specially designed Erickson-State 4 cutter boring bar. Special boring bar is designed with readily detachable 4 cutter boring head. Perfect tool alignment never disturbed, because only the head is removed when tool change is required. Operator simply removes dull head, replaces it with a sharpened one, and sends dull head to the tool room. New tool is in perfect alignment—only the head has been changed. Result: adjustment time eliminated — production increased — tool cost reduced.

### Do YOU Have a Boring Bar Problem?

Put Erickson-State's famous 4 cutter principle to work on your tough boring bar job. Get these big advantages: faster feeds and speeds: more regrinds: bit rigidity and less adjusting time with

exclusive locking features; 7% to 5½ range; bits replaced easily and inexpensively. The Erickson-State Boring Bar can lick your problem too. Get full details now.



Ask for Catalog T-3 or Erickson Engineer

### ERICKSON TOOLS DIVISION

2300-C Hamilton Ave.

Cleveland 14, Ohio

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

### NEW MULTILIFT ROTARY MAGNETOOL

A new design of the Multilift Rotary Magnetool, used for steel pick-up purposes, gives 50% more magnet power and offers improved handling features, according to the manufacturers, Multifinish Manufacturing Co.



The rotating magnetic tube is propelled manually in carpet sweeper fashion to pick up steel scrap or parts from floors, parking lots, and driveways. Its uses include the removal of tramp iron from liquids, powders, and the like, and separating steel from other materials. The device can easily be attached to trucks. It is water-proof and oil-proof and operates without wires or electricity. An acid-proof model adaptable for use in tanks is also made.

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The magnetic tube rotates with the wheels and loads automatically to a thickness of 34" on the entire 360° of surface. Unloading is accomplished by pushing the wiper ring from one end of the tube to the opposite end, where a non-magnetic area causes instant release of the load. The unloading area is tapered so parts slide off readily without lodging. The 24" Model 20 is illustrated. Write for details to:

Multifinish Manufacturing Co. 2114 Monroe St., Dept 562A Detroit 7, Mich.

### IMPROVED CUTTING OIL HAS WIDE EFFICIENCY RANGE

A new cutting oil, stated to be especially efficacious in the machining of all series of stainless steel, as well as chrome nickel alloys and monel, has been introduced by Oil Products Co. Designated as Excel No. 60, it is an improved high sulphur ester cutting oil, claimed to be stable under all operating conditions involving the machining of the aforesaid metals.

The new No. 60 brings to industry the combined features of a superior finish and increased tool life with close limits obtainable at higher speeds and feeds than standard practice. For example, tool life on 18-8 steel is maintained as high as 8 hours or more at speeds up to 125 feet with no loading. The finish pro-

# ABORATORY GRADED

STAR DUST speeds up production enormously and produces finishes and superfinishes down to less than .0000004 of an inch.

Precision LAPPING POWDERS for PRECISION work

GAUGES, TOOLS, DIES, etc., with tremendous TIME SAVING. These factors make R DUST indispensable in lapping and superfinishing on HARDSTEELS, TUNGSTEN TAR DUST Indispens

 Absolute control of particle sizes
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 Cumplete range of grit sizes

There is a STAR DUST Field Serviceman in your territory.

139 DUANE STREET



duced is of a superior quality, and the carry off is reduced to a minimum.

The manufacturer will furnish trial samples upon request. Actual shop performance of Excel No. 60 warrants this confidence. For further details on securing samples, write:

Oil Products Co., Inc., Dept. BB 4113 So. LaSalle St.

Chicago 9, Ill.

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### CABLE-LAID GROMMET HAS HIGH SAFETY FACTOR

A new addition to the line of Acco Registered Wire Rope Slings has been



announced by the American Chain & Cable Company, Inc. It is catalogued as the SW-42 Cable-Laid Grommet with

Double Acco-Loc Splices. Made entirely of preformed improved plow steel wires, the Cable-Laid Grommet gives flexibility comparable to manila rope, as well as complete freedom from crankiness. It can be used in the same types of hitches as manila rope. The strength of the all-steel construction permits use of smaller diameters than would be necessary with fibre ropes, and provides a high safety factor of 5 to 1.

The Acco Registered Cable-Laid Grommet is furnished in diameters from 9/32" to 1-1/2", with rated capacities up to 53 tons in basket hitch. Capacities and dimensions are shown in the SW-4 Acco Registered Wire Rope Sling Catalog available on request. Write:

American Chain & Cable Co., Inc. Dept. BB

Bridgeport 2, Conn.

### CHAS. H. BESLY & CO. OPENS DETROIT OFFICE

E. K. Welles, president of Charles H. Besly and Company, Chicago, announced recently (Feb. 28) the opening of the company's new Detroit office at 7376 Grand River Ave., Detroit 4, Mich.

E. W. Hutchinson will be in charge of the Grinder and Abrasive divisions, while J. E. White will be in charge of tap sales at the new Besly Detroit office. The Detroit office telephone is Tyler 8-8181.

The Besly Company manufactures high speed and carbon taps. Its machine tool division manufactures equipment for production grinding. The factory for both divisions is located at Beloit, Wis.



### SCHERR GEAR GAGE EXPEDITES GEAR CHECKING

Another new model Gear Gage, designed especially for shop use has just been added to the line of gear testing equipment and precision tools manufactured and distributed by the George Scherr Company. This shop model can be carried in a tool box or in the pocket. The teeth of this gage are especially protected against damage

The shop model Gear Gage has 23 blades of the following dimetrical pitches: 4 through  $12 - 14 - 16 - 18 - 20 - 22 - 24 - 26 - 30 - 32 - 36 - 40 - 48 - 64, in <math>14\frac{1}{2}$ ° pressure angles.

The teeth are of the correct involute shape, machined with the aid of special fixtures by the Fellows Gear-Shaper Generating Method. The segment blanks of each pitch are first turned in fixtures to conform to the full diameter, in accordance with the number of teeth for the full circle.

These Gear Gages are used for a quick check of gears as illustrated. Designers, estimators and gear users will find this set highly practical for visualizing the size and strength of teeth or checking the finished gear for diametrical pitch. The use of the Gear Gage effects a tremendous saving in time since it is not necessary to count



the teeth of the gear nor measure the outside diameter. For complete information, write:

George Scherr Co., Inc., Dept. BB 200 Lafayette St. New York 12, N. Y.

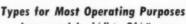
### Nicholson CUSTOM Construction Enables You to

### Choose a Valve to Suit

### Your Specific Corrosion or Pressure Problem

Choice of 6 metal combinations. Other Nicholson features: specially treated hard seats; easily repacked; heavy-bodied; neat, installed in any position. For all mediums. Press, to 5000

lbs. CATALOG 546.



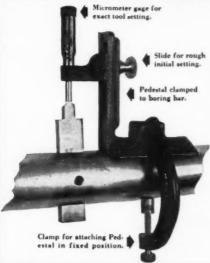
Lever models,  $\frac{1}{4}$ " to  $2\frac{1}{2}$ ", press. to 5000 lbs. Motor, solenoid and foot models.  $\frac{1}{8}$ " to  $2\frac{1}{2}$ ", press. to 375 lbs.



117 OREGON STREET, WILKES-BARRE, PA.



Steam & Air Traps Control Valves Expan. Mandrels Arbor Presses Welded Floats HERE IS A REAL TIME-SAVER!



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The Bartelt
Pedestal Micrometer

Enables you to set boring tools accurately from the bar diametereliminates common cut-and-try methods. Permits quick micrometer height measurements from flat or round surfaces. Can be used as a production-inspection tool with a wide range of settings. Ideal for jobbing shop and toolroom mechanics. Quality construction, moderately priced-sold direct-to-you by the manufacturer. All components precision machined of high grade materials and carefully assembled. Made in eight models for various applications. Write today for literature and direct-to-you prices.

BARTELT ENGINEERING CO. 1218 Partridge Ave. Beloit, Wisconsin

ELECTRO-MECHANO

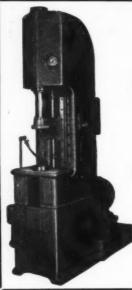
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# The New Guided Ram High Speed Hydraulic Press

For Fast Assembly and Broaching

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GREENERD ARBOR PRESS CO.



Series "E" Model 1400-E Pivot Mount

These cylinders are made to your order with any length stroke you request in any of these bore sizes:

11/2, 2, 21/2, 3, 4, 5, 6, 8, 10

In ordering please write mounting, bore, stroke and piston rod thread you want.



Cylinders—any bore, any stroke, any mounting, air, water, hydraulic

Series "E" Model 1300 Rear Flange Mount

# 1 WEEK DELIVERY ON THESE STANDARD CYLINDERS



Series "E" Model 1500 Foot Mount



Series "E" Model 1200 Front Flange Mount

### PNEUMATICS INCORPORATED

Cylinder Manufacturing Department
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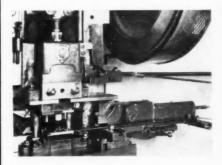
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### NEW AUTOMATIC PUNCH PRESS FEED

A compact new punch press feed, designated as the Rol-Di-Feed is introduced by the H. E. Dickerman Manufacturing Co. This self-contained, cam driven feed may be quickly installed on the press bolster, and in some cases, directly on the die shoe, to feed stock to the press in any desired direction. The Rol-Di-Feed is of open side design, and can, therefore feed strip materials, such as metal, fibre, paper, mica, plastics, etc. in nearly any width, and in continuous coils or in short lengths.

Feeding throughout most of the 360° of press shaft rotation, the new unit advances stock over the die at a relatively slow rate of speed, resulting in increased accuracy of feed length when feeding simple piercing and blanking, compound or progressive dies operating at high speed.



The maximum feed length is 9" on presses having 3" or more of stroke, and approximately three times the stroke for press strokes under 3". The feed length is adjustable in increments of .001". The new unit requires a 3" x 9" mounting space for the feed; for the cam, a space 2" x 2%" is needed. The unit measures 22" long, 12" wide, 7" high. For complete information, write:

H. E. Dickerman Mfg. Co., Dept. BB 321 Albany St.Springfield, Mass.

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# THE "Stark",

# Integral Drive Precision Bench Lathes



Smooth built-in variable drive with instant speed ranges 156 to 3500 rpm.

No special bench or cabinet.

Dependable for long service on exacting manufacturing, toolroom, die shop, experimental and laboratory work.

Standard Open Cone Lathes with complete (30) Attachments in  $\frac{1}{4}$ ",  $\frac{1}{2}$ ",  $\frac{3}{4}$ " and 1" capacity.

NOW'S THE TIME to send us your old Starks for correct re-conditioning.

Prompt service.

Stark Tool Company
Established 1862

WALTHAM, MASSACHUSETTS
Originators of the American Bench Lathe



### IT'S AN ETTCO KEYLESS DRILL CHUCK

No key is needed! Ettco Drill Chucks are self-tightening. All you do is insert the drill and turn the body by hand—just enough to hold it. Drilling action does the rest, automatically centering the drill and clamping it in a firm and rigid grip. What's more, it only takes a twist of the body by hand to release the drill.

This keyless feature puts an end to nonproductive time spent in looking for lost keys. It saves time in other ways, too, because it permits drills to be changed in a jiffy and eliminates retightening.

> Ettco Drill Chucks are available at leading mill supply houses throughout the country. Order a supply today.

### BULLETIN NO. 6 - Free

It gives details and prices of these highquality, precision-made chucks. Write for your copy.

### ETTCO TOOL CO.

596 JOHNSON AVE., BROOKLYN 6, N. Y.

DRILL & TAP CHUCKS • TAPPING ATTACHMENTS MULTIPLE DRILLING & TAPPING HEADS DRILLING & TAPPING MACHINES

### REGULATOR

Thermo Electric Manufacturing Co. has introduced a new stepless input controller for use in regulating temperatures of electrically heated furnaces, ovens, mantles, tanks, pots, etc. Known as Model 600 Temcometer, this instrument is designed for use where permanent through-panel mounting is desired. It is  $3\frac{1}{2}$ " in diameter and extends 4" behind the mounting panel.

The instrument dial is graduated in per-cent time "on", and stepless regulation between 5% and 100% is provided. When the control knob is properly positioned to produce the desired temperature in the connected equipment, that temperature is maintained automatically. Unlike rheostat and synchronous motor driven controllers, the



Model 600 Temcometer maintains constant watt-hour input and even temperature regardless of fluctuations in line voltage. For loads over 6 amperes, 115 volts, or 3 amperes, 230 volts, the instrument is to be connected to a relay of proper capacity for the connected load. Full specifications are available upon request. Write:

Thermo Electric Mfg. Co., Dept. BB 486 W. Locust St.

Dubuque, Iowa

### NEW COLLET CHUCK HAS WIDE ADAPTABILITY

An ingenious collet chuck which also acts in the capacity of a holding fixture, and is easily adaptable to any turning, milling, drilling, grinding or polishing operations, has recently been introduced by F. E. Pini Manufacturing Co. The wide application of this device will save time and energy of the operator, as well as increasing production and profit for the plant.

The new Davos Chuck is hardened and precision ground through to a .0002" run out. Every part is carefully selected steel in guarantee utmost performance and to insure ease of opera-

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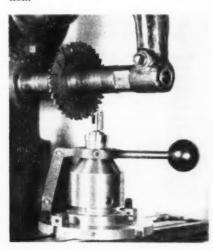
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The chuck's streamlined construction enables it to be able to convert any machine or fixture into a time-saving production tool. It is built to fit all sizes of draw collets from 1.C to 3.J, and up to 3" capacity. It will also fit any size of step chuck collets, machined to customer's special requirements; the arbor will hold any bore from 1/2" to 3" and up. The customer need not buy special collets, but can use the standard draw collets which he has on hand.

F. E. Pini Manufacturing Co. 2017 N. Halsted St., Dept. BB Chicago 14, Ill.

### Dies, Chucks, Patterns, Tube Bends

Make them faster . . .

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Chuck Jaws made of Cerromatrix

Reduce tool room labor cost. Make chuck iaws for holding irregular parts in a fraction of the time by the Cerromatrix method.



**Duplicate of Master** Pattern made with Cerrobase





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Thin wall tubing and extruded shapes are readily bent to small radii without buckling, flattening or wrinkling where Cerrobend (melting point 158° F.) is used as filler. Readily melts out cleanly in boiling water.

X the operation in which you are interested, and clip this ad to your letterhead. Literature will be forwarded without obligation.



COPPER CORPORATION

Dept. 12, 40 Wall Street, New York, New York

### NEW HEAVY-DUTY PRECISION THREAD ROLLER

Watson-Flagg Machine Company has announced an addition to its line of Precision Thread Rollers in the form of a Heavy-Duty model with increased work capacities. The ability to roll continuous threads, knurls, or serrations is among the features added to the new Model "C".

A frame of great weight and sturdiness has been provided, to allo w for 72% higher hydraulicallyapplied rolling pressures

to accommodate higher physical properties of material, greater diameter and pitch thread sizes, as well as increased length of work.

The machine will now take diameters from .138" up to 4" with a maximum of 8 pitch. Its regular length of thread capacity, when through-rolling is not



being used, is 2¼" standard, 3¼" maximum. It will handle any material that has an apreciable percentage of elongation.

Threads, knurls or serrations are formed as the blank is rotated between two cylindrical dies of 6½" average diameter. These large dies provide high



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surface rolling speeds (200 to 540 f.p.m.) and an average 20.4" of useful circumference which factors combine to provide maximum output and die life.

The simplicity of set-up, an inherent advantage of the two-die principle, is such that a complete job changeover can be made in an average of from 30 to 45 minutes. The work-rest and dies are the only parts required for this change. The cycle control, positive stop and micrometer size control are easily and rapidly adjustable.

For descriptive bulletin, address: Watson-Flagg Machine Co., Inc. 845 East 25th St., Dept. BB Paterson 3, N. J.

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CUNNINGHAM HAND TOOL HOLDER

The M. E. Cunningham "Safety" justable Hand Tool Holder has been redesigned of lightweight cast aluminum which has greatly improved the construction and efficiency of this popular device for holding hand stamps and other tools.

Although stronger than the previous

steel tubing construction, the redesigned Tool Holder is lighter and more convenient to handle. The holder "head" section has been strengthened in the new design, and the wall thickness at



the corners is greater. Holders are now available in two models—Model HTF-1 (illustrated), with finger lever-type control for fast opening of holder when

CHICAGO 14, ILLINOIS



stamps or tools are inserted or released, and Model HTS-2, with knurled adjustable screw-type control for adjusting the lever spring to accomodate various size tools.

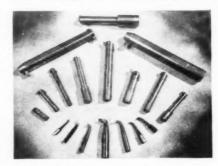
The Hand Tool Holder prevents smashed fingers and flying stamps caused by off-angle hammer blows, and is useful for inspectors in aircraft and steel-producing plants, and for any operation using hand stamps, chisels, drifts, center punches, etc.

Holders are available in four ranges of sizes: Size No. 1 holds ¼" to ½" width or diameter tools; Size No. 2 for ½" to ¾" range; Size No. 3 for ½" to 1" range; Size No. 4 for ¾" to 1¼" range. All holders can be used with square, octagon or round tools. Both models are furnished in a full range of sizes. Complete data sheets can be secured direct from:

M. E. Cunningham Co. Dept. BB 228 E. Carson St. Pittsburgh, Pa.

### MAXWELL ANNOUNCES NEW STANDARD LINE

The Maxwell Company has announced the availability of a standard line of Forged Bits and Boring Bars.



They will fit any standard tool holder, and they are available in an extensive range of sizes (including the in-between sizes) for use in boring, facing, recessing and similar operations.

The Forged Bits are fabricated of 18-

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4-1 high speed steel, and are available from stock in shank sizes from 3%" to 1", in increments of 3/8". They can be furnished having minimum boring capacity down to 3/4" for the 3/8" shank size, and proportionately the same for other shank sizes. In addition, these tools offer a selection of maximum depths for each of the various shank sizes, as well as minimum boring diameters.

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Boring Bars, which are made from alloy tool steel, are now available having shank sizes from ½" to 1½", in increments of ¼". They can be furnished having either straight or angular insertable bits. The standard cutter is 60°, and are also available with cutter angle of 45°. Boring Bar sizes can also be furnished in a wide variety of minimum bore and maximum depths. Included is a very short stub bar series, recommended for the facing of boring of short holes, and in applications where the bar must be short-coupled for line boring in which the tool holder itself enters the bore.

Write for Catalog No. 1-FB giving available listings of Forged Bits, or for Catalog No. 1-BB, listing sizes of the Boring Bars.

The Maxwell Company, Dept BB 220 Broadway Bedford, Ohio

### RELTOOL ACQUIRES NEW PLANT

Reltool Corporation, manufacturers of metal cutting tools, has purchased a new plant for the purpose of expanding its Milwaukee operations, particularly the manufacture of milling cutters. The new plant will give Reltool an additional 20,000 sq. ft of floor space for manufacturing operations. Two acres of land adjacent to the new plant will provide room for expansion and the construction of an addition in the near future so that all of Reltool's Milwaukee manufacturing facilities will be located under one roof.

The company is moving its main office from 712 W, Michigan St., to 4540 W. Burnham St., the site of the new plant.

# The NEW COMET TOOL HOLDER with ECCENTRIC Adjustment



Fits all %" dia. bars, specially designed for precision boring and internal threading, for holes 3/32" and up. Shank: %"x%". Collets for smaller bars available.

### COMET TOOL COMPANY

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Makers of famous COMET Int. Threading and Boring Tools

### TWISTITE QUICK-ACTING SAFETY CLAMP

An up-to-date tool maker's clamping device, the Twistite C-Clamp, has been developed by Richards' Industries, Inc. This useful device has discarded the old full-threaded method of adjustment, employing instead a push-pull design that sets the pressure bar in any position from full open to full closed in an instant. An eccentric spline arrangement enables the operator to lock or unlock the pressure bar with a single twist.

A safety roller clutch built into the tool prevents frame distortion, when excessive pressure is applied to the handle. The ball-bearing foot cannot creep nor mar the material held, and eliminates twisting. The deep throat frame is available in extra-strong, heat-treated aluminum in sizes 2" to 6". Larger sizes can be furnished upon request.

This C-Clamp is useful for welding, since there are no exposed threads, and the rod and frame are spatter-resistant. The safety clutch prevents frame distortion from the welding heat. The pressure unit can be employed without the frame in jigs and fixtures. For complete specifica-

and fixtures. For complete specifications on this useful tool, write the manufacturer:



Richards' Industries, Inc., Dept. BB 20 Leonard St., N.W. Grand Rapids 5, Mich.

### LIVINGSTONE HIGH PRESSURE AIR VENT

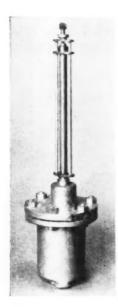
A new high pressure air vent for steam-using equipment was shown for the first time at the recent Plastics Exposition in New York by the Livingstone Engineering Company.

Called Speedyvent, the new device provides rapid and continuous escape of air from equipment and piping while closing tight against both steam and hot or cold condensate. Plant engineers are finding that Speedyvent, properly installed on the condensate return line of presses or other steam using equipment, is the key to fast heating and effective gravity return in closed systems eliminating the need for traps, condensate receivers, pumps, motors, relays, floats, and controls.

Livingstone engineers designed and built Speedyvent because, while many thermostatic-float devices are available for low pressure service, they are not suitable — or safe — at pressures up to 500 p.s.i.g., the operating range of Speedylectric Boilers.

Operating results have been so gratifying the company is now listing Speedyvent as a standard product. Four models are available which will handle pressure ranges up to 600 p.s.i.g. Complete information may be had upon request to:

Livingstone Engineering Co., Dept. BB 100 Grove Street Worcester 5, Massachusetts



### NORTHWESTERN DISPLAYS NEW SET-UP TOOLS

At the current Fourth Southern Machinery & Metals Exposition, held in Atlanta, April 25-28, the Northwestern Tool & Engineering Company, Dayton tool production firm, is displaying several of its new developements in the field of set-up tools. These are shown in operation in the picture below.



A complete range of sizes of the company's line of Flanged Nuts, from 5/16" up to 1" will be shown. These heavy duty nuts eliminate the use of loose washers. They are machined from the solid, and are heat treated for wear.

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The manufacturer is adding two additional sizes to its line of stud nuts, one for the \(^3\kappa'\) T-slotted machine with \(^5/16''\) studs, and one for the \(^1-1/16''\) T-slotted machines, equipped with \(^1'\) studs.

A step block 50% larger than any previous similar type has also been added to the company line (see illustration). The block is graduated in 1/16" steps. The blocks are 2" thick, and have a range of from 3½" to 9". These blocks are interchangeable with Northwestern's other step blocks; they will be furnished in cyanided steel or hard maple. Write for details to:

Northwestern Tool & Engineering Co. 117 Hollier Ave., Dept. BB Dayton 3, Ohio

### NEW 12" DISC SANDER HAS WIDE WORK RANGE

A new 12" Disc Sander designed for use in machine shops, pattern making and woodworking shops, and other applications such as plastics, is being manufactured and marketed by Childs & Co.

While the new sander is used for finishing work, burring, grinding of irregular contours and angular grinding work, the use of suitable fixtures makes it adaptable to some actual machine work of a light nature in machine shops.

Features include: heavy cut construction with guard to cover rear of sanding disc; dust chute with removable cover for servicing; heavy ribbed table tilts 45° and tilt is shown on graduated scale on left side of machine; adjustable mitre gage width 2" high and 53¼" wide; mitre head may be moved 45° in either direction; 1800 r.p.m. speed recommended, sealed ball bearings require no lubrication; overall dimensions are 18½" wide, 16" deep; 15" high.

For additional details, write: Childs & Co., Dept. BB 444 Main Street Conneaut, Ohio

### TAYLOR DYNAMOMETER AND MACHINE COMPANY

The purchase of the Machinery Division of the Taylor Manufacturing Company, Milwaukee, Wisconsin, was recently announced by A. C. Flamme, formerly Sales Manager of the company, and C. E. Chavez, consulting engineer.

The new company will be known as the Taylor Dynamometer and Machine Company. Offices are at 5108 West Center Street, Milwaukee. Few changes in personnel were made; Herman A. Karweik will continue as chief engineer.

The manufacture of "Hi-Eff" Sensitive Drilling machines, "Hi-Max" Universal Static Balancing machines, and "Hi-Eff" Hydraulic Dynamometers will be continued, and improvements adopted as developed.



Used throughout all industry to safely remove dirt and grease from interiors of electric motors, from bearings, shafting, gears, and intricate machinery.

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-1800 light cuts per hour. -Either horizontal or vertical position.

Collets changed instantly.

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Model D—Ratchet indexing only—1" cap.

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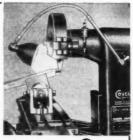


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Machine General

Flexible arm with swivel socket adjusts to any vital seeing area — quickly — easily. Resists vibration. Special oil-proofing for wet operations, Engineering service available. Write for Bulletin

VIMCO MFG. COMPANY, Inc. 109 Brayton St. Buffalo 13, N. Y.

# Shop Hints

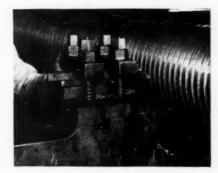
### TURNING A 35,000 LB. SCREW

One of four 35,000-lb. screws, believed to be the largest ever produced, was turned recently at The Baldwin Locomotive Works. It will be an adjustable, tensional member in one of two vertical type 5,000,000-lb. universal testing machines, the largest in size and capacity yet produced in the United States for testing in tension, compression and flexure. The U.S. Bureau of Standards has had for many years a testing machine of 10,000,000 lb. capacity, but in compression only. These four screws, 55 ft. long and 16 in. in outside diameter, have a single square thread of 2-in. pitch and 1-in depth, leaving a cross-sectional area of approximately 154 sq. in. to carry half of testing machine loads. The screws are made of SAE 1045 forged steel.

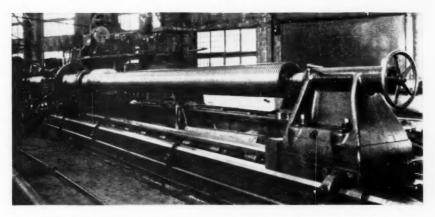
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Illustrations show a close-up of the tool and holder and a general view of the lathe and screw.



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### A PROFILING FIXTURE FOR CONTOUR TURNING

by Robert Mawson

One of the machining operations sometimes performed in machine shops is forming contours on the ends of details. An example of this description is the upper surface of a piston These surfaces may be a portion of an arc, ellipse or sometimes uneven outlines.

One method used in some shops to

machine these surfaces is to make a template with a similar contour to that which is to be formed and then machine away material from the piece until a similar shape is obtained using the template as a guide.

Under the best conditions this procedure is unsatisfactory, because its success depends largely on the accuracy of the vision of the operator when checking the machined contour with the template. Another disadvantage is that the operator consumes so much time in machining the surface and then checking with the template that the operation is costly and cannot be considered a production job.

In the illustration is shown a profiling fixture to be used for turning contours which produce parts at a lower production cost and in a more pratcical manner than the method above described. This fixture is made with a cold rolled steel bolster plate "A" which is machined to span and rest on the ways of the lathe where the profiling operation is to be performed.

Detail "B" is the template, which is machined to have exactly the same contour as the finished machine piece. This template is made from case hardened machine steel and is fastened to the bolster plate with three 3/8 inch filister head screws and two 1/2 inch



bolts of any machineable material and with any thread, remember . . . WHO makes them better.

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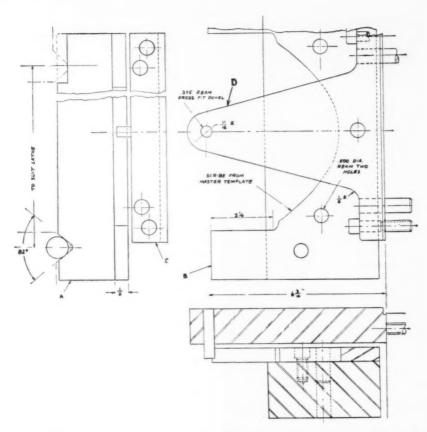


### DRESSER RADIUS PUT ONE ON EVERY SURFACE GRINDER

Hardened Shaft. Bearing Adjustable for Wear, Diamond Always Clamped Perfectly in Place. Order Direct on 10 Day Money Back Guarantee.

10" Wheel Size for DoAll or Norton-\$35.00, less Diamond

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The profiling arm is shown at "C" and is made from cold rolled steel plate. The tracer pin "D" is made from tool steel, hardened, and is forced into position in the profiling arm. The profiling arm is fastened to the cross slide of the lathe with two 3/8 inch filister head screws and two 1/2 inch dowel pins. When attaching the profiling arm to the cross slide of the lathe care should be taken to see that the machining tool in the lathe tool post is central with the tracer pin. In other words the cutting edge of the lathe tool should be in line

with the horizontal center line of the fixture.

To use the profiling fixture: — the piece to be machined is placed in the chuck of the lathe, centered to obtain the correct position and the chuck screws tightened to hold the piece securely in place. The operator then moves the lathe carriage and cross slide and feeds in the turning tool to the desired depth of cut

When the correct machining position has been determined the operator moves the bolster plate, and therefore the template, so that the template is in con-



tact with the tracer pin. The fixture is now properly located for machining the contour which is done by the operator feeding the cross slide of the lathe with his right hand across the moving piece and at the same time, with his left hand moving the lathe carriage carefully keeping the tracer pin in continuous contact with the contour of the template. Following this procedure will produce on the piece held in the lathe chuck a counterpart contour to that of the template.

By substituting in the bolster plate other templates, any shape or outline of contour can be formed with this fixture. The profiling operation is quick and therefore at a low production cost and what is most important the results are accurate because the operator can see when the tracer pin is in contact with the template and if this relationship is maintained the desired results will be obtained.



### SPECIAL MACHINE FOR SILVER ALLOY BRAZING

The technique of precise application of closely controlled radiant gas heat in silver alloy brazing of brass sub-assemblies is utilized in a special purpose automatic machine, produced by Selas Corporation of America for fast and economic operation.

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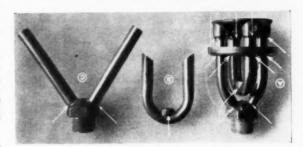
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The machine brazes eleven joints on 540 units per hour by the Gradiation method. Seven joints brazed simultaneously, are gas-tight; four current joints are also

support joints are also brazed simultaneously. The sub-assembly is shown in the accompanying illustration,

The machine has 46 ceramic gas-air burners, each of which is adjustable with additional heat control provided at the four burner manifolds. The two turntables are controlled by a variable-speed drive, synchronized exactly to the requirements of heating time and gas volume.

Pre-mixed gas and air are supplied to the machine in proper proportions for complete combustion and at constant pressure by a combustion controller. The combustion system is



Brass sub-assembly, silver-alloy brazed on special purpose machine. A. Completed unit; B. and C. components. Brazed joints are indicatd by arrows.

equipped with automatic fire checks.

The fuel requirements of the machine are estimated at 350 cubic feet of 1,000 Btu natural gas per hour. Fuel economy is illustrated for this machine with an assumed natural gas price of 50c per 1,000 cubic feet: 18.4c per hour, or 35c per 1,000 brazed units. The overall dimensions of the machine are: 4'6" wide, 6'6" long, 4'6" high.

This method of joining metals has the operational flexibility that permits its application to standardize units of production and to units that are changed frequently.





You can save 25% or more by replacing tapershank with straight-shank drills and driving them with Scully-Jones Style "B" Drill Chucks, built to outlast many drills.

You get a positive drive as the milled flats on the shaft of the drill are engaged in the splined section of the chuck.

You reduce rejects. Bore and shank are concentric within .002", gauged at a distance equal to the projection of a standard drill from the chuck. This assures a true running tool.

You can get

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from our stock of all popular sizes

For complete details see pages 42— 48 of Scully-Jones Tool Engineering Manual 500 or Slide-Type Selector No. 5 on Style "B" Drill Chucks.



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You Get Low Cost, Fast, Accurate Production with Our Standard and Special Tools .

even on small runs. But if the tools are designed for a particular job they will pay for themselves only if they are used on long runs.

Sometimes there is a tendency for metal to cling to the tool or pile up on the cutting edge. This can be minimized by setting the tool correctly, providing proper rake and clearance angles, by polishing tool surface or clearance spaces, by avoiding drag, by using proper lubrication, or by a combination of these practices.

While most machining is done dry, on tapping and drilling a lubricant may be used to advantage, this makes for smoother cutting and for a smoother finish. It also reduces tool breakage and maintenance.

For lubricants use a combination of lard oil and kerosene. Some find a 50-50 mixture of kerosene and machine oil suitable. Some use kerosene exclusively, especially on parts to be plated because it does not

#### MACHINING ZINC ALLOY

Zinc alloys used in die casting are soft and free-machining. It is best to use high speeds and light cuts. Because die castings are usually cast to close tolerance only a small amount of metal need be removed.

High-carbon steel tools are usually satisfactory; for long runs carbides will perform well. Carbides can be used for all machining operations except tapping and certain types of threading. General purpose carbide tools can be used, if they are adaptable to a number of applications.

leave an oily film.

On finishing operations all parts must be cleaned thoroughly. It is unwise to eliminate lubricants because they necessitate a cleaning operation prior to plating. All parts must be cleaned prior to plating whether lubricant is used or not.

Besides their uses as component parts in assemblies and machines, zinc alloy die castings are finding wide applications as finished products. They lend themselves easily to plating, painting, or other forms of finishing.

# For Precision — Non-Clog — Fine Screens RAYMOND

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### **H&K PERFORATED METALS**

Designed especially for experimental work, the Raymond Laboratory Mill employs H & K Perforated Metals in pulverizing all kinds of dry non-abrasive materials. The different sized screens used in this mill cover the entire surface of the grinding chamber, serving as liner in addition to insuring fineness of grind.

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Precision non-clogging screens for grinders are a top application for "H & K Perforated."

Strainers, filters, baffles and grilles are other popular uses in industry. A wide range of sizes, shapes and spacings in nearly every metal . . . as well as plastics, fabrikoids, plywood and other sheet materials.





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- 4. It must be safe to use, especially as regards fire and accidents.
- 5. A cutting fluid must be transparent so that the work remains visible. This is especially important on precision work which must be observed at all times.
- 6. It must be of such a consistency that it will not form deposits which might conceivably clog up the circulation system. Too much time is lost if the system is to be continually cleaned of gummy deposits.
- 7. Select the fluid which can be used on a variety of operations and on a variety of work. This reduces the need for having a great many different kinds of cutting fluids floating around the shop.
- 8. It must actually cool and reduce the cutting temperature. Thus tool life is increased as well as production. Accuracy is easier held.

### QUALITIES OF CUTTING OILS

What properties must a cutting oil possess to be of greatest benefit to the user? It should posses the following characteristices.

- 1. It should have a low viscosity to permit the separation of impurities and chips which are collected as the fluid circulates through the cooling system.
- 2. It must not cause corrosion or permit rust to form.
- The cuttng fluid must not cause skin infections or other forms of irritation.

9. The good cutting fluid prevents adhesion between the material of the chip and the cutter teeth. This improves chip formation and surface finish.

There are two popular groups of cutting fluids: emulsion of water and other elements such as mineral oil containing soap or sulphur, waxes, and pastes; cutting oils which may be straight mineral oils, animal and vegetable oils, or compounded oils having a sulphurized base. Sometimes air is used as a coolant agent supplied in form of a jet. Constant improvements are being made in the fluid field so that every type of materal may be machined to greatest advantage.



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CHUCKS by Hanchett Set
New Production Standards
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Two types, STANDARD and the ultra-powerful SUPREME — both with all steel laminated top plates — patented hermeti-coil waterproof construction. MAGNA-LOCK chucks give you 22% more working surface—uniform, pull — sizes from 4 x 6" to 30 x 96". And ask about special chucks, top plates, parallels and V-blocks.



### NEUTROFIER

For faster, more efficient magnetic chucking—this new combination Rectifier and Demagnetizer will help you lower production costs.

The Hanchett magnetic chucking method lifts the limit off production speeds for small parts finishing. Check your shop for machining operations where chucking and set-up time cuts into profits. Find out whether completely automatic "hands-off" production would boost your net. Then drop us a card. We'll help you apply Hanchett Magnetic Chucking to your grinding, milling, drilling, shaping operations. . . .

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### HANCHETT MAGNA-LOCK CORP.

Magnetic Chucks and Devices
BIG RAPIDS MICHIGAN

#### LUBRICATING BROACHES

Lubricants are used to cool to work during cutting, and they reduce the power necessary for operating the tool, at the same time allowing the chip to pass easier over the cutting edge, thus increasing tool life.

In selecting the cutting oil consider the degree of finish required and the tool life. For a good finish chlorinated oils have proved to produce the best finishes. Sulphurized oils are fine in contributing to long tool life. When properly used soluble oils will sometimes give equally good results.

Oils should be applied in large amounts, being careful to use it under low pressure, and at the same time making sure the tool is thoroughly flooded at its point of contact with the work. In round broaches on horizontal machines the lubricant flows downward so that the spaces between the teeth must be kept full if the top of the tooth is not to run dry. Sometimes it is impossible to keep the spaces filled, it is then necessary to submerge the broach and the part in a trough of oil. On some large parts it becomes necessary to sheathe the part and broach in a chamber and pump oil into it under pressure.

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On cast iron and some non-ferrous metal, it is possible, and frequently even desirable to broach dry. On the other hand, materials such as aluminum and copper require special considerations in order to produce the required finish.

Be sure that all cutting edges of vertical broaching, both internal and surface, receive their share of lubrication. On a surface broach set-up several nozzles or jets are preferred. On internal vertical jobs, as found on the down-pull machines, more than one nozzle is helpful. At all costs keep the lubrication clean. Chips and dust are constant trouble makers.

Besides being harmful to the broach, grits are murder on the ways of the broaching machine. It is important that the coolant be clean before it is allowed to contact work and broach again.



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Please send your illustrated brochures which give complete prices and specifications on Procunier High Speed Tapping Heads and Machines.

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PROCUNIER "TAP SAVER"

The exclusive "Tru-Grip" tap holder is lighter, smaller in diameter. It affords easier tapping close to walls or shoulders, eliminates "chewed up" tap shanks. Holds the tap

#### RUBBER-COATED GLASS CLOTH

A new G-E silicone rubber-coated glass cloth which will withstand operating temperatures as high as 520°F.; a new adhesive for bonding silicone rubber to itself, metals and ceramics; and many new applications for molded and extruded materials were the major developments achieved by the General Electric Chemical Department in the silicone rubber field during the past

Particularly designed for use as a gasket in radial motor and other air-

craft engines, the G-E silicone rubber-coated glass cloth, which is available in both sheet form and fabricated parts, possesses excellent tensile and tear strength and may be applied in many types of electrical and mechanical equipment where high physical properties are required.

The new adhesive possesses properties similar to silicone rubber itself, remains flexible and resilient over temperatures ranging from -70°F to 520°F and withstands continuous temperatures of 300° to 250°F in a dry air circulating oven. It also can be used to bond glass to glass, glass to metals and metals to metals.

It is also effective for joining the ends of extruded cured stock to form O-rings of uniform thickness. Previously these gaskets had to be made by molding the loose ends of un-cured stock together in a press causing one portion of the ring to be smaller than the other.

Although still used primarily as gasketing material, G-E silicone rubber is finding increased use in many industries where its heat-resistance and its chemical and moisture resistance offer many advantages over other materials. The fact that it will not adhere to metals or other materials at high temperatures is an important feature of the material.

One new interesting application for G-E silicone rubber is as a gasket in chemical reactors where the material withstands temperatures as high as 400°F.



Cartridge Ball Bearings are described in 28 pages. It is claimed cartridge ball bearings provide simplest possible mounting, eliminates many extra mounting parts, saves costly machining operations, speeds up assembly and disassembly, reduces maintenance costs, etc. Booklet describes applications, gives dimensional data, load rating, dirt protection, grease type, etc. Norma-Hoffman Bearing Corp., Dept. BB, Stamford, Conn.

Catalog of Gisholt Machines describes in detail the various machine tools manufactured by the Gisholt Machine Co. Mentioned, and illustrated are ram type turret lathes, saddle type turret lathes, standard tools and chucks, automatic lathes, dynetric balancing machines, portable wattmeter balancer, static balancing machines, special machines. Boooklet is profusely illustarted. 32 pages. Gisholt Machine Co., Dept. BB., Madison, Wis.

Arbor Presses are described in catalog No. 40 published by the Greenard Arbor Press Co. In twenty pages hydraulic and hand operated presses are discussed and illustrated. Ranging from No. 1 press of ½ ton, to the No. 33 press of 30 ton, all models are illustrated. Specifications are supplied. Greenard Arbor Press Co., Dept. BB., Nashua, N. H.

Plain Type Milling Machine with fullwidth knee is designed for heavier milling cuts and for maximum performance with carbides. Ten h.p. are delivered to the spindle through efficient gear train. Knee is mounted on column by square lock bearing. Bearing on top of knee is almost as wide as the saddle is long; approximately twice as wide as conventional knee bearing. Illustrated, specs. George Gorton Machine Co., Dept. BB., Racine, Wis.

Equipment and Facilities for the manufacture of special machinery is described and illustrated in 8 pages. Folder is of file type for easy filing. Folder describes the various bays used for assembling; machining departments, as well as the type of equipment available for the performance of work; engineering department; heat treating department. Folder is well illustrated. Back cover features photos of turret punch presses manufactured by Wiedemann. Wiedemann Machine Co., Dept. BB., 4272 Wissahickon Ave., Philadelphia. 32, Pa.

26" Hydraulic Vertical Gear Grinder for spur and helical gears is described in 8 pages. It is claimed the grinder lowers the cost of finishing large, hardened steel gears to a level where the additional advantages of the ground finish far outweigh the cost factor. Grinder, using basic-rack-shape wheels, generates true involute tooth-profiles in both spur and helical gears. Profusely illustrated, specifications. Pratt & Whitney, Div. Niles-Bement-Pond Co., Dept. BB., West Hartford 1, Conn.

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Swirl Type Dust and Fume Eliminator. Experimental studies show that a rotating action is an effective means of eliminating the air film which surrounds dust particles. A ratio of approximately 50 GPM of water is utilized for every 1000 cu. ft. of contaminated air. Grinding booths are also described. 12 pages. Drawings. Illustrations. Specs. Schmieg Industries, Inc. Dept. BB., 300 Piquette Ave., Detroit, 2, Mich.

Special Wire Reinforced Hose is of lightweight construction, flexible, bends sharply without kinking or flattening, has no deep folds to restrict airflow when bent sharply, sizes range from 1-1/4" to 24" dia. Bulletin describes typical installations, and uses. Prices, specs. American Ventilating Hose Co., 15 Park Row, Dept., BB. New York 17, N. Y.

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Stainless and Heat Resisting Steels, tool and die steels, and cast-to-shape steels are described in a new booklet. Typical analysis and publications are included for each brand. 16 pages. Hessop Steel Co., Dept. BB., Washington, Pa.

Veelos Balata Belts for power transmission, elevating, and conveying, are claimed to possess exceptional strength because specially woven cotton duck is thoroughly impregnated with pure balata gum, and before leaving factory every belt is pre-stretched to its full limit. Prices, specs. Manheim Mfg. and Belting Co., Dept. BB., Manheim, Pa.

LE-HI Hose Couplings, hose clamps, air valves, and manifolds are described in 4 pages. LE-HI's safety-locking universal coupling, with exclusive self-locking springs, is feature item. Also included are throttle valves for compressed air service, air hammer hose couplings, special high pressure couplings. Hose Accessories Co., Dept. BB., 17th and Lehigh, Philadelphia 32, Pa.

Reversible Type Thread Gaging Member having approximately twice the

## Motorized HOPPER UNITS



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For use with Presses, Centerless Grinders, Thread Rolling and Slotting Machines, or any special machine.

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#### DETROIT POWER SCREWDRIVER CO.

2809 West Fort Street, Detroit 16 • Michigan gaging length of standard AGD design thread gage is now manufactured by Swedish Gage and described in new 4-page bulletin. After normal wear has been received merely reverse the member within the handle for additional gage life. Swedish Gage Co., Dept. BB., 8900 Alpine, Detroit, 4, Mich.

Manual of Broaching. 117 pages of broaching information dealing with internal broaches, broach pullers and face plates, surface broaching, broaching machines, operation and maintenance of broaching equipment, how to order broaches. Well illustrated with drawings and photos. 20 pages of involute splines tables. Many pages of examples of broaching parts, citing production figures and other pertinent data. Excellent chapter on sharpening broaches and lubrication. Inasmuch as the Detroit Broach Co. does not manufacture broaching machines, but devotes its efforts to the design of broaches and their fixtures, the book is concerned more with the broaches and less with the machines. Detroit Broach Co., Dept. BB., 20201 Sherwood Ave., Detroit 12, Mich. Br

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Reversible Plain and Thread Plug Gages, centerless lapping machines, and complete line of tungsten carbide and norbide gages are described in catalog No. 49. In addition to the economy of the reversible features, Size Control gages now are made of tungsten carbide and norbide materials. Root relief on major ring diameters, truncated set plugs, convoluted and lapped thread gages with chip groove are described. Size Control Co., Dept. BB., 2500 Washington Blvd., Chicago, Ill.

Gusher Coolant Pumps are built primarily for machine tools and similar applications to circulate coolant liquids which frequently contain grit and abrasives. They are designed to operate vertically on centrifugal principles. 66 pages are studded with drawings, applications, specs., and installations. Prices. The Ruthman Machinery Co., Dept. BB., Cincinnati 2, O.

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910 E. Nevada St. Marshalltown, Iowa



Bristol Diesel Engine Pyrometers. Approved Navy and commercial type diesel engine pyrometers and thermocouples suitable for use on all types of diesel engines are described. Photos, drawings. 12 pages.

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Industrial Waste Disposal describes the application of the automatic pH recording and controlling instruments and recording flowmeters to industrial waste disposal operations. Photos, drawings of applications. The Bristol Co., Dept. BB., Waterbury 91, Conn.

Abrasive Belt Machinery is described in bulletin No. 70. Discussed are bench and floor models with horizontal backstands, flexible horizontal-vertical backstands, individual wheel heads, various sizes of spring loaded and air cylinder backstands using from 6" to 20" dia. contact wheels. The Standard Electrical Tool Co., 2486 River Road, CinCinnati 4, O.

Cylinders, air, hydraulic, water are described in 12 pages. Drawings, specifi-

cations, as well as descriptions of clevis brackets and rod eyes are treated in detail. 12 pages. Ortman-Miller Machine Co., Hammond, Ind.

The Tornado Method. 34-page booklet, covers in detail practically every problem of plant and institution floor care and maintenance. Describes equipment, procedures regarding new and old floors whether new or old, and of varying compositions. Booklet includes stain removal chart. Breuer Electric Mfg. Co. 5100 Ravenswood Ave., Dept. BB., Chicago 40, Ill.

Fixed Gages are illustrated and described in 116-page catalog. It is a profusely illustrated handbook of factual and useful information for the buyers and users of perishable gages. Booklet contains prices, specifications, tables and diagrams. Included are prices of gages which conform to the unified screw thread system recently agreed upon by the English speaking countries. The Sheffield Corp., Dept. BB., Dayton 1, O.

## HIGH SPEED PRODUCTION CONTINUOUS OIL GROOVING

WICACO CONTINUOUS OIL GROOVER cuts grooves of all descriptions, internal or external, continuous or intermittent.

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Manufacturers of Precision Machinery and Machine Parts





#### WORK ROUTING, SCHEDULING AND DISPATCHING IN PRODUCTION

By John Younger, Late Professor and Chairman of Department of Industrial Engineering, Ohio State University; Honorary Member, A.S.T.E.; Member A.S.M.E.; and Joseph Geschelin, Detroit Editor, Automotive and Aviation Industries, Vice-Chairman, Production Engineering Activity, S.A.E. Chairman, Independent Research Committee on Cutting Fluids. Published by the Ronald Press Co., New York. 1947. Third Edition. 168 pages. \$3.50.

This valuable work stresses the sim-

plified, stream-lined methods by which production men can best integrate their foremost purpose—that of getting successive jobs and production operation under way smoothly, while maintaining schedules, then bringing out the next job along in its natural sequence by a regularly paced plan of control.

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In a skillfully divided break-down of 24 chapters, the authors have taken up in logical succession, the grouping of the various phases which are contingent upon the routing, scheduling and dispatching of the operations required in the average industrial plant. The interrelation of work routing and the extent to which it can be standardized is taken into consideration.

The first two editions of this book were used in engineering colleges and business schools which offered courses in production. The new edition has brought the approach up to date, not only in the revision and inclusion of new illustrations, but in actual entire





Luck doesn't make a winner...
It isn't just luck that finds COULTER MACHINES successfully at work all over the world. It's the perfect combination of more than half a century of "on-the-job" experience, plus competent personnel that know threading equipment problems, and how to solve them.

COULTER has "been-in-there" since 1896.

- ★ Thread Miller. For long and short threaded parts, internal, and external threads. Multiple and single cutter types.
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rewriting of most of the chapters. New case studies on mass production and descriptions of the recently developed "process" machining method (using master electric controls) are given.

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The contents of the book have been deliberately condensed in order that the information included may be presented in a more simplified and understandable manner than by attempting to include the involved procedures which constitute the average production control system.

#### **AUTOMOTIVE FUNDAMENTALS**

Edited by Irving Frazee, Editorial Co-ordinator, Assistant Manager, Service Department, Ford Motor Co., Organizer and Administrator of Dealer Service Training; and Earl L. Bedell, Editor-in-Chief, Divisional Director of Technical and Trade Schools and Vocational Education, Detroit Public Schools. Professor of Industrial Education, Wayne University. Published by American Technical Society, Chicago. 1949. 538 pages.

Here is a book which should prove invaluable to one of the largest segments of machinists, the automobile mechanic. This large, well-integrated volume is written for his specific assistance. The wide extent of the information it contains is presented in simple and clear language, so even a relative amateur in the field will have little trouble in following the subject matter.

As basic knowledge, every mechanic should know how each unit of a car operates. With the help of "Automotive Fundamentals", he will also know the "why". Intimate and skilled knowledge of the "why" will solve most maintenance and repair problems.

The authors, who are leaders in the automotive and industrial training fields, have proved in their training of thousands of mechanics that such training pays off. This has resulted in better and more efficient mechanics, who are able to assimilate each new development in the automotive field in their stride, without having to undergo periods of retraining.

Fundamentals in any subject never



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#### PROTECT-O-METAL No. 2

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OK. Send me a trial gallon. I understand you will cancel the invoice if I'm not entirely satisfied.

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become obsolete. Despite the rapid strides which have been made in the fields of automotive design, with new developments made every year, the fundamentals remain constant.

1338 S. CICERO AVE. CICERO 50, ILL.

According to the publishers, various parts of the entire text of this book were reviewed before publication by some thirty of the leading automotive manufacturers of the United States, and their many useful suggestions were included in the text. With such authentic, first-hand information donated by experts in the field, the value of the book's contents has been considerably enhanced. Further acknowledgements have been rendered to more than seventy of the leading industrial, automotive, electrical, glass, instrument, and other manufacturing firms for providing most of the several hundred illustrations and diagrams used to add to clearer understanding of the text.

The main body of the book is divided into nine chapters, each devoted to a major subdivision. These include: Automotive Vehicles (a survey chapter, touching on units which are common to all types, and the definitions of the various parts); Engines; Fuel Systems; Ignition Systems; Electrical Systems and Instruments; Power Trains; Brakes; Suspensions and Steering; Steering Control, Wheel Alignment and Tires. The book is further equipped with a comprehensive index.

#### JIGS AND FIXTURES FOR MASS PRODUCTION

By Leland A. Bryant and Thomas A. Dickinson. Published by Pitman Publishing Corporation, New York and Chicago. 1947. xii plus 222 pages, \$3.50

According to the authors' preface, "the purpose of this book is to provide comprehensive and authoritative information regarding those manufacturing tools that are collectively known as jigs and fixtures." The publishers state that this is "the only jigs and fixtures book that traces the history of the subject and shows how it is related to industry as a whole."

The book thoroughly covers the essential considerations of the design and fundamentals of standard jigs and fixtures. The various types are taken up in a chapter which is filled with valuable information. The following subject head is a discussion of Master Tools. The need, advantages and use of Tool Masters and their structural designs is discussed.

The chapter on the Master Tooling Dock follows: this device is an invention of Leland A. Bryant, chief tool engineer for the Aircraft Engineering Corporation. A detailed synopsis of this ingenious device is included. The Master Tooling Dock is essentially a mechanical means for projecting the two-dimensional (or flat) master layouts of a streamlined body into the third dimension without loss of accuracy. The various physical characteristics and operation of the "dock", along with a discussion of designing tools for it, as well as its actual use, are discussed in detail.

Further chapters on the construction of jigs and fixtures follow, including their methods of construction, and the various metals used. Pneumatic and hydraulic mechanisms are treated of, including a brief summary of the elements of hydraulics and their application in modern industry. The uses and general types of some of the new plastics are gone into. Possibly the most useful chapter is the tenth and last, which takes up in detail the miscellaneous special types of jigs and fixtures used in modern industry. It shows how jigs and fixtures are related to industry as a whole, rather than just the machine shop.

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The book is simply written and contains many useful illustrations which enhance the value of the text. The work is of permanent importance to tool and mechanical engineers, product designers, as well as plant superintendents and similar executives. It is also suitable for use as a reference text in manufacturing and engineering courses.

#### BEST RESISTANCE WELDING PAPERS TO RECEIVE \$2,250 IN AWARDS

Six prize awards totaling \$2,250 for the best papers on designing for, application of, and research in resistance welding, submitted to the American Welding Society prior to August 1, 1949, have been announced by the Resistance Welder Manufacturers' Association.

The top prize of \$750 will be awarded for the best paper from an industrial source dealing with such topics as redesign of a product for lower cost manufacture by resistance welding; product improvement through use of resistance welding; resistance welding research; development of new procedures which broaden its usefulness; etc.

Authors of the second and third best papers in this category will be awarded prizes of \$500 and \$250 respectively.

The author of the best paper submitted by a university instructor, student of research fellow, will receive a prize award of \$300, with a \$200 prize for the second best paper, from a university source, which in the opinion of the Board of Awards represent the greatest "original contributions to the advancement and use of resistance welding." A new \$250 prize for the best paper by an undergradute student has been added this year for the first time.

Anyone in the United States and Canada is eligible to compete for these prizes, the judges for which will be appointed by the American Welding Society. "Industrial sources" include not only manufacturing but also consulting engineering and laboratory organizations.

Copies of the rules governing the awards are available from the Resistance Welder Manufactures Association, 505 Arch St., Philadelphia 6, Pa.

Arthur E. Newlon, formerly with Stromberg-Carlson Company, Rochester, has been appointed to the staff of the National Bureau of Standards, where he will work in the Ordnance Research Laboratory of the Bureau's Electronic Division.



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#### STEEL . . . MAN'S SERVANT

United States Steel Co. Chicago, Ill.

38 minutes. 16 mm. sound film in Technicolor with orchestration; (16 mm. sound prints are on one 1600-foot reel; 35 mm. sound prints are on four 1000-foot reels). Available on loan basis from any of six U.S. Steel Film Distribution Centers, including 208 So. LaSalle St., Chicago 90, Ill., 71 Broadway, New York 6, N. Y., Columbia Steel Co., Russ Bldg., San Francisco, Calif.

The fascinating drama of steelmaking tells the story of steel in full color, from the time the raw ore leaves the mines until the finished product leaves the mills. Professional Hollywood technicians and equipment were employed to make this picture, but the actors are the actual workers, and the action of the film follows them at work on their daily routines.

The audiences who have already seen this unique industrial film have been entranced by its brilliant color sequences, suitable accompanying music and its dramatic sound effects. The musical score was composed especially for this picture, and recorded by musicians under the direction of Robert Armbuster; the music provides a pleasant, continuous background for the narrative, which is skillfully interspersed by Edwin C. Hill.

The film serves to acquaint audiences more fully with the great variety of ramifications of the steel industry. It shows the tremendous activity and enormous investment in equipment which precedes the manufacture of countless steel products from tacks to automobiles, bridges, skyscrapers, and trains.

#### TORCH WELDING

Aluminum Company of America 801 Gulf Building Pittsburgh 19, Pa.

17 minutes. Sound, 16 and 35 mm. Obtainable from Motion Picture Dept., Aluminum Company of America.

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This film is one of a series of three on "How to Weld Aluminum". Although this metal is one of the most weldable of all the non-ferrous group, its reaction under the welder's torch is very different from that of other commercial metals. This informative film explains in detail the progressive steps necessary to make a good torch weld. Preparations of welding surfaces, correct flux mixtures, proper manipulation of the welding torch, with sample butt and tack welds in various gages of aluminum sheet and plate are graphically presented.

Examples of torch welding of aluminum forgings, castings, and aluminum sheet and plate are shown, together with an analysis of proper and improper welding procedures. Primarily, "Torch Welding" stresses the importance of complete penetration of the weld, and demonstrates how continued practice enables the welder to accomplish superior work. Close-up photography of actual welding operations enhances the film's effectiveness.

#### REFINEMENTS IN THE MANUFACTURE OF ABRASIVE PRODUCTS

Bay State Abrasive Products Co. Westboro, Mass.

32 minutes. 16 mm. sound film in color. Available free on loan basis upon application to Bay State Abrasive Products Co., Advertising Department, Westboro, Mass.

The subject matter of this industrial film concerns various factory processes in the manufacture of grinding wheels and other abrasive products; successive steps are described, such as mixing the abrasive with the bond, hydraulic press operations, firing through high temperature kilns, hardness grading, balancing, speed testing, etc. There is

also detailed visualization of some of the manufacturer's exclusive features, such as controlled porosity, fractional grades, a unique process of forming mounted points, wire balancing of molds and "green" wheels, to assure precision balance of the finished wheels.

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All these manufacturing processes, and others are included in this interesting film. Where practical, a Bay State technical engineer will accompany the film in order to answer audience questions. The Bay State Abrasive Products Co. requests that at least a month's notice be allowed in order to list the film into the showing schedule, and if possible, an alternate date should be given.

#### PITTSBURGH FIRM ESTABLISHES EUROPEAN BRANCH

Hamilton Pump Company, Inc., designers and builders of special machinery, Pittsburgh, have formed a new company for the foreign manufacture of Hamilton Grinding and Finishing Machines. The new firm will be known

as Hamilton Surface Grinders, Ltd.; the address is P. O. Box 77, Sheffield, England.

This new company has been formed in the British Isles by a group of men who saw the possibilities of the Hamilton Grinding and Finishing Machines in the grinding and polishing of ferrous and non-ferrous metal in sheet and strip forms.

Realizing the increasing difficulty of obtaining dollars for the purchase of these machines from America, and the importance of the machines in the British steel and non-ferrous trades, negotiations were opened with A. E. Hamilton, of the Hamilton Pump Co., Inc., Pittsburgh, for the purchase of the patents, manufacturing rights and full selling rights for these machines throughout the British Isles, Europe, India, Pakistan, Australia and South Africa.

The directors of this new company have wide knowledge of the steel and engineering trade, and have already considerable experience in the operation of the Hamilton machines. They are in a position not only to give the benefit of their actual experience, but also to demonstrate these machines in operation.

#### EDISON MAGNETO BUSINESS TO WICO.

Benjamin F. Morris, vice president of Thomas A. Edison, Inc., West Orange, N. J. and manager of the company's Automotive Division, has announced that the Wico Electric Co., of West Springfield, Mass. will purchase Edison's magneto manufacturing operations. Speaking before the February meeting of the Automotive Electric Association at the Edgewater Beach Hotel in Chicago, Morris said that the sale will include inventories of finished magnetos, parts and raw materials, as well as tools, but not buildings. The transfer will be effective as of May 1st, 1949.

Removal of the magneto operation now employing 200 persons will provide room for expansion of other Edison operations.



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#### **HOW BUILT IN SAFETY**



PRODUCTION COST



EXCLUSIVE—Single stroke non-repeat mechanism assures operator safety when material is fed by hand to the dies. Operation without accidents insures longer die life and eliminates down time for maintenance resulting in fewer rejects, higher production and increased profits. PRESS-RITE PRESSES include other outstanding features such as

 Automatic cam actuated brake
 Anti-friction roller bearings in flywheels
 The 4 point contact sliding key clutch

See the PRESS-RITE PRESSES at your dealer, compare them with other presses of equal capacities, or .

WRITE TODAY FOR BULLETIN NO. P-348-B

6 MODELS 5 to 30 ton cap. Sales Service Machine Tool Co. 2363 UNIVERSITY AVENUE PAUL 4. MINNESOTA



## Controlled Tolerance

#### FOR YOUR EXPERIMENTAL AND PRODUCTION UNITS

SHORT RUN STAMPINGS made to your exact specifications in quantities of 3 to 20,000. Stampings for blanking, piercing, forming, drawing, extruding, stencilling, drilling, tapping, etc. are made in any size up to 9" x 12" in any thickness up to 3/16" . . . from any material that can be stamped.

Expert die makers, modern precision equipment, experienced workmen and careful inspection, assure you of quality stampings within "controlled tolerances".

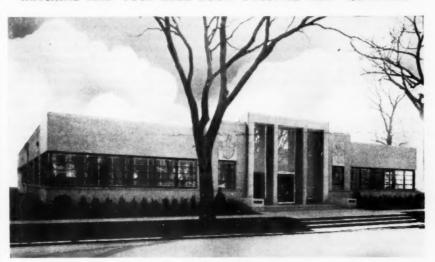
Write today ...

for new FREE BULLETIN or send us your blueprints for prompt low cost quotations.

TOOL AND MANUFACTURING CO. 3610 ALABAMA AVE. (ST. LOUIS PARK) MINNEAPOLIS, MINNESOTA "QUALITY STAMPINGS IN SMALL QUANTITIES"

# News of the industry.....

#### MACHINE AND TOOL BLUE BOOK OCCUPIES NEW QUARTERS



Last December the Hitchcock Publishing Co. moved from its old location on South Dearborn Street, Chicago, to its new \$150,000 home at 222 East Willow Avenue, Wheaton, Illinois, some 25 miles due west. With no interruptions in its service to readers or advertisers, the entire organization was transplanted to new soil.

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Truly a milestone in the history of the Hitchcock Publishing Company, the opening of the new building was attended by nearly a thousand people, representing advertisers, advertising agencies, suppliers, machinery dealers, publishers, and others. Two days were set aside for making visitors acquainted with the company's new facilities and plans. Guided by executives and other members of the staff, hundreds of persons watched Linotype machines in operation, saw the Ludlow typecasting machine, the Elrod machine for making rules, looked closely at automatic electric typewriting equipment, stencil-cutting and addressing machines, and me-

tering-mailing equipment, and saw type made up into pages on the stones for delivery to the company's printing plant at Pontiac, Illinois, 80 miles away.

The sleek wood-paneled offices—general and private—were critically and approvingly examined by the visitors; and the walls of the executive offices covered with Laurel and Lauran Philippine mahogany were objects of particular interest because of the beauty of their graining and color. The reception room and the president's office are paneled in American walnut.

Seen from the outside, the building presents a facade 100 feet wide on Willow Avenue and has a depth of 125 feet, providing 12,500 square feet of floor space, more than half of which is devoted to offices and storage, the remainder to mechanical production. The front has a large central entrance to the vestibule and reception room, which are closed on the street side by tall plate-glass windows flanked by cutstone pilasters.

A system that is new in office buildings of this type provides warmth in winter and cool air in summer in automatically controlled amounts. Ducts under the floor provide outlets for the hot or cold air that is circulated through them by the central plant,

Glass of low thermal conductivity, set in steel-sash windows, admits day-light but transmits little of the cold or heat from the outside or inside, so that relatively uniform temperatures can be maintained indoors regardless of weather conditions. The suspended ceilings are soundproof and carry flush-mounted fluorescent lamps for artificial illumination.

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A soundcaster system serves as a means of communication between the telephone switchboard operator and persons away from their telephones and provides recorded music—for the relaxation and entertainment of employees during the lunch hour and the midmorning and midafternoon rest periods, when hot coffee and snacks are



served. Loud-speakers set flush in the ceiling in the general office and shop provide the necessary sound distribution,

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A kitchen with a mechanical refrigerator, stove, sink and candy and beverage machines is available for use by the employees.

The Hitchcock publishing enterprise had its beginning 51 years ago, when the Machine Tool List was established. Other publications include, in addition to Machine and Tool Blue Book, the Wood Working Digest, which serves woodworking industries; Resale, which covers the market for used and rebuilt metalworking and electrical machinery and equipment; La Maquina, a Spanish-language industrial magazine published bimonthly for Latin America; Industrial Reference, an annual publication for distribution throughout the world and its Latin American companions, Avisador Tecnico (in Spanish) and Indice Tecnico (in Portuguese). All these publications are widely distributed.

Machine and Tool Blue Book, for example, reaches more than 33,000 users of metalworking machinery and nearly 3,000 machinery dealers and mill supply houses. It is one of the oldest publications in the field.

Wood Working Digest, which appeared first in 1898 as the Lumber List, is distributed monthly to nearly 10,000 manufacturers of wood products and nearly 1,100 machinery dealers and distributors.

Every month Resale reaches more than 20,000 metalworking machinery, electrical and power equipment users and buyers, sellers and rebuilders of used machinery.

La Maquina (The Machine) reaches machinery dealers and users throughout Latin America and has a distribution in excess of 12,000 copies every issue. The three export catalogs have a combined circulation of almost 30,000 copies, of which the English edition (Industrial Reference) accounts for 17,000, the Spanish edition (Avisador Tecnico) for nearly 8,000, and the Por-

### It doesn't pay to PINCH PENNIES



#### **CUTTING FLUIDS**

IN selecting cutting fluids, savings pinched out in purchasing are often thrown out in the scrap pile. A Milwaukee screw products company learned this machining Type 304 stainless. Of several cutting fluids tried, D. A. Stuart's ThredKut 99 with paraffin oil was the only one which enabled the shop to produce this job at a profit. On the forming operation, ThredKut 99 gave 500 to 600 pieces per grind, as compared to only 100 to 135 with other oils; on drilling 300 to 400 pieces with Thredkut 99, only 75 to 100 with other oils; and 22 pieces per hour average with ThredKut, only 8 with other oils!

It is wise economy to buy the oil best suited for the job. Write for booklet, Cutting Fluids for Better Machining.

STUART service goes with every barrel



27391/2 South Troy Street, Chicago 23, III,



The new TAPORDRIL is a sturdy high speed driving unit, designed for drilling or tapping two or more holes on close center work. Used in a drill chuck or tapping attachment, it provides an efficient and economical means of drilling, reaming, tapping or counter sinking. Needle bearings are available in some sizes.

Several good territories available. Write for complete literature.

Try TAPORDRIL on your next job for extra Profits.

L. E. OTTNEY & CO.
3650 West Eleven Mile Road
Box 469 LINCOLN 3-5195 Royal Oak, Mich.

tuguese edition (Indice Tecnico) for more than 4,000.

Every year the company publishes

Every year the company publishes and distributes nearly 700,000 magazines and catalog reference books. Since its establishment, it has issued many millions of copies of industrial publications for the metalworking, woodworking and related industries.

The business of the Hitchcock Publishing Company is expanding so rapidly that it may soon outgrow the firm's new quarters. Work well done continues to attract and hold a growing number of readers with buying wants and advertisers who make a wide variety of machinery, equipment and supplies for filling them. To meet the increasing demands of both calls for a willingness and readiness to advance in step with their ever-expanding requirements.

#### WISCONSIN CARBIDE TOOL COMPANY MOVES TO LARGER QUARTERS

The Wisconsin Carbide Tool Company announces the removal of its fabricating activities from their Fond du Lac Avenue address to their new plant located at 3343 North 35th Street, Milwaukee 10, Wisconsin.



Along with the augmented manufacturing area available, this concern has equipped itself with numerous new machines chosen to mass-produce carbide tipped tools economically. These new facilities will permit the Wisconsin Carbide Tool Company to enlarge its scope of operation while continuing to serve the many customers who have made possible the rapid growth of this firm.

#### Low-Priced

Broken Tool
REMOVER



See Your Dealer of Write Us Today.

Only \$95

It's sensational — Every shop, every tool crib should have one. Removes broken tools and studs by electrical disintegration from a part being machined without damaging the part. Saves castings otherwise scrapped. Set it up on your drill press.

ELOX

744 N. Rochester Road Clawson, Michigan, U.S.A. Phane, Datroit: Jordan 4-6173

#### B & S MACHINE TOOL DIVISION SALES CONFERENCE

Machine tool salesmen of the Brown & Sharpe Manufacturing Co. recently returned to the Providence plant for a four-day conference designed to promote the sale of the company's products. About forty salesmen and representatives from all over the United States and Canada attended. During their stay they were given an intimate knowledge of the most recent designs, sales promotion and advertising programs undertaken by the company to extend the sales of its varied line of products.

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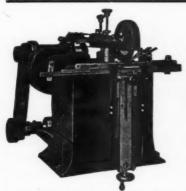
1949

Officers, executives and key-men throughout the plant spoke on activities under their jurisdiction. Discussions were held on the line of milling, grinding and screw machines, as well



as on repair part service and other functions allied with the sale of Brown & Sharpe machines.

New products were displayed and photographic enlargements provided in



#### Wardwell Model EC Combination Grinder

The only single unit grinder adaptable for hack, band and circular saws that does not depend on the shape of the grinding wheel to form the shape of the tooth. This unique feature enables operator to grind a variety of blades without dressing or changing wheels.

### Grind 3 types of saws ON ONE MACHINE!

Circular - Hack - Band

Increase the cutting hours of your blades over 100%! Wardwell E. C. Grinder sharpens old metal saws so that they actually cut better than new.

Write for details

WARDWELL

MANUFACTURING CO. Cleveland 9, Ohio 3165 Fulton Rd.

a specially equipped conference room to supplement the machine demonstrations given under shop conditions.

#### SCULLY-JONES DEVELOPS NEW

Scully-Jones and Company, Chicago, announces the formation of an Engineering and Design Service Division. This move constitutes a departure from the previous practice of the 40-year-old production tool manufacturing firm. Making available to others its research and technical ability, Scully-Jones now offers help regarding operational procedure; methods, engineering and processing; tool and machine design—in addition to the special and catalogue tools always have been its specialty.

Concerning the new company division, J. A. Scully, president, says: "This is a move toward expansion of our operations. Excellent design and engineering talent has always been a part of our company . . . we're selling a by-product in the form of greater servive to our customers."

WAGNER ELECTRIC ACQUIRES

A plant consisting of industrial buildings containing 90,000 square feet located on an 8-acre tract at Mount Vernon, Illinois, has been purchased by Wagner Electric Corporation of St. Louis. The Wagner company is concentrating its facilities for building transformer tanks at the new plant, which is equipped with cranes capable of handling large, heavy items, and which is served by three railroad spurs.

The Mt. Vernon plant is the second Illinois property to be acquired by Wagner Electric. Early in 1948 a plant located at Edwardsville was purchased, and adapted to the manufacture of automotive air brakes and hydraulic industrial brakes. This plant is now on a full-time production basis. By purchase and by additions to its main plant in St. Louis County, Wagner Electric has now increased its manufacturing capacity approximately 50% since the end of the war.



MACHINES TO BEND COLD PIPE, CONDUIT, BOILER TUBING AND SOLID BAR . . . BENDING TABLES ALSO AVAILABLE



Above: Hand powered Type A-30 . . , up to 180 bends . . , all sizes from 1/2 to  $2^n$  .

Only 7 parts. World's fastest, simplest machine. Note assortment of bending dies . . . this process makes shorter tangents than any other. Occupies only 18" by 18" floor spacel

Other Sizes Available

Factory and Main Office:
9 Furnace Street Poultney, Vermont

#### RADIANT HEAT BENDS

For residential work—at 6" and 9" radius bends on 1/2" and 3/4" pipe.

For industrial sizes — at 6" and 9" radius bends on 1" and 11/4" pipe.

All the above bends and sizes are specified and accepted by most heating engineers and contractors.

Furnished as extras if required on our Type A-30

" American "
PIPE BENDING MACHINE
Company INC.

#### INDEX OF NEW ORDERS AND SHIPMENTS OF MACHINE TOOLS

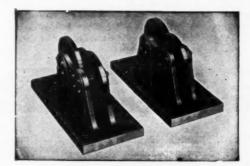
Date	New Orders (Total)	Shipments 1945-1 Foreign Orders (Included in Total)	Shipments (Total)	Ratio Ratio Unfilled Orders to Shipments
1947		i otal)		to anipments
Aug.	62.1	14.6	63.6	7.5-1
Sept.	63.7	14.7	77.0	5.9-1
Oct.	81.0	16.0	94.8	4.6-1
Nov.	75.6	11.5	84.7	5.1-1
Dec.	81.1	14.8	98.4	4.1-1
1948 .				
Jan.	83.1	14.0	75.3	5.4-1
Feb.	77.3	12.7	87.1	4.7-1
Mar.	86.3	16.1	83.6	4.6-1
Apr.	86.3	14.1	82.0	4.7-1
May	73.5	11.4	82.6	4.5-1
June	83.4	11.9	94.4	3.8-1
July	74.0	13.3	62.4	5.9-1
Aug.	73.7	13.6	69.8	5.2-1
Sept.	73.1	11.6	84.7	4.2-1
Oct.	67.4	14.0	80.4	4.2-1
Nov.	72.2	18.1	76.2	4.4-1
Dec.	76.7	16.2	96.9	3.2-1
1949				
Jan,	87.0	21.9	68.8	4.6-1
Feb.	p 81.0	p 26.6	p 70.4	p 4.7-1
p-Preliminary		•	•	

#### PILLOW BLOCK BALANCING WAYS

Especially suited for large diameter work, as a subbase can be made of proper height to give necessary clearance for work.

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> Anderson Pillow Block Balancing Ways are precision built with chilled iron discs which rotate with minimum friction on sensitive special bearings. Many manufacturers have endorsed them for profitable, efficient static balancing.



Built in 1000, 2000, 5000, 10,000 and 20,000 Capacities



Send for Bulletin 5-5

ANDERSON BROS. MFG. CO., Rockford, III.
Hand and Power Hydraulic Presses, Balancing Ways, Roto
Checkers, Hand and Power Scrapers, Spotters.



**Lovejoy Type "A"** milling cutters are unsurpassed for removing metal quickly, accurately and smoothly. And a big PLUS feature is blade design—H.S.S., carbide and cast alloy blades are interchangeable in any Lovejoy Type "A" housing ever built—from  $4\frac{1}{2}$ " to 24" in diameter! No need to carry a large stock of blades because Lovejoy gives immediate delivery from its own large stock.

Another asset is Lovejoy's exclusive "positive-locking" device. This means that a minimum of stock must be removed when sharpening blades. It allows use of a large percentage of each blade. It holds blades immovably even during heavy intermittent cuts.

The Lovejoy man near you will be pleased to give details and production estimates on your own work.

Lovejoy TOOL COMPANY INC. Springfield, Vermont

#### DELTA-SPONSORED WELDING CLINICS

Something new in manufacturer-dealercustomer relations has just been introduced on the West Coast in a series of six "welding clinics" sponsored by the Delta Manufacturing Division of Rockwell Manufacturing Company, Milwaukee, Wis. Serving the purpose of demonstrating the work potentials of Delta's new welders, the clinics were scheduled in San Diego, Los Angeles, San Francisco, Portland Seattle, and Vancouver, B. C., over a twoweek period ending April 9th. Robert E. Zahn. of Delta's Engineering Department conducted the clinics.

The new Delta welders, recently announced, consist of a spot welder, an arc welder, and a "Dual-Weld" combination unit incorporating the two types of welding.

According to Delta, the spot welder is a high-production unit that finds a natural market in the light metal fabricating industries, including the manufacture of bicycles, radios, lamps, and other electrical appliances, as well as household items of stainless steel.

The arc welder is not a high production machine but finds ready acceptance in farm shops, garages, and so on. The combination unit is said to be ideal for sheet metal contractors, as well as for maintenance departments of the large plants, school shops, repair shops, etc.

According to a Delta spokesman, "The fabrication of metal during the war years took such a great turn toward welding that there was created a nat-

ural market for new and more versatile types of equipment.

The clinics are planned, Zahn said, to give both dealers and customers complete opportunity to acquaint themselves with the new units.

Hosts included the State Vocational Teachers Show in San Diego, the Harron, Rickard & McCone Co. of So. Calif. in Los Angeles, C. W. Marwedel in San Francisco, the Chown Hardware Co., in Portland, the Star Machinery Co. in Seattle, and McLennan, McFeely & Prior in Vancouver.

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## The Base Cutting Oil that has FLEXIBILITY

FISKE'S "DARL" OIL can be used straight or reduced with mineral oil to the degree suitable for the tool, the work and the metal. That is FLEXIBILITY. "DARL" OIL works both ferrous and non-ferrous metals. It is non-corrosive, and permits visibility when mixed. Having exceptional anti-weld value, lubricity and high film strength, it is therefore excellent in drawing and stamping as well as for machining. Standardize with "DARL" and save money.

There is a Fiske Lubricant for every metal working operation. Each is an outstanding product and results in more production, better finish and increased tool life. Let us solve your special problems. Write today to Fiske Brothers Refining Co., 135 Lockwood St., Newark 5, N. J., or 1506 Oakdale Avenue, Toledo 5, Ohio.



#### METAL WORKING LUBRICANTS

#### A.S.T.E. ELECTS 1949 OFFICERS

Robert B. Douglas, Montreal, was elected president of the American Society of Tool Engineers at the group's Annual Meeting held in March in Pittsburgh. Douglas, who is president of Godscroft Industries Ltd., succeeds I. F. Holland, of Hartford.

"This year tool engineers are faced with a great responsibility," the new ASTE president declared. "The postwar joyride of manufacturers and sellers is jolting to an abrupt halt before a rising barrier of a buyers' market. Competition is resuming its normal place in the economic scheme. There will be increasing demands on the knowledge and skill of tool engineers to establish the ways and means of producing goods in quantity at low cost to meet the demands of tomorrow's market."

Douglas has been a senior member of the Society since 1942, is a charter member of the Montreal chapter and has held numerous important committee posts in the organization.

The first Canadian member to head the Society. Douglas was em-ployed by the Canadian Car and Foundry Ltd. becoming works manager in the Propeller Division, prior to forming his own company two years ago. Born in Ari-zona of Canadian parents, he was educated in the United States, receiving degrees from Virginia Military Institute and Massachusetts Institute of Technology. The other new officers named are:

Herbert L. Tigges, first vice president. Tigges is vice president of Baker Brothers, Inc., Toledo, Ohio, and is serving as an advisor and consultant for the manufacturing division of the National Security and Resources Board. He is also a director of the National Machine Tool Builders Association. J. J. Demuth, second vice president is General Superintendent and a member of the Executive Committee of the Sligo Iron Stove Co., St. Louis.

Halsey F. Owen, third vice president is a professor of industrial engineering on the staff of Purdue University, Lafayette, Ind.



#### HUGO L. OLSON, 1877 - 1949

Hugo L. Olson, 71, president of the Sundstrand Machine Tool Co., Rockford, Ill., and its subsidiary, the American Broach and Machine Co., Ann Arbor, Mich., and active for many years in a score of Rockford industries and business enterprises, died on January 31 in a Chicago hospital. Mr. Olson was stricken by a heart attack in his home on January 24, after spending the day in the Sundstrand plant.

His interests embraced the entire community until four years ago when ill health made it necessary to confine his activities to the Sundstrand and American Broach companies. Mr. Olson was internationally known as a machine tool builder.

He was born in Wermland, Sweden, September 20, 1877, and came to Rockford in 1893 at the age of 15. He began working in the machine shop of the John Nelson Knitting Co. He later was employed by the American Insurance Co. here and rose to cashier.

In 1910, Mr. Olson joined the Rockford Tool Co., and the Rockford Milling Machine Co., as secretary and general manager, and became one of the organizers of the Sundstrand Adding Machine Co. He served this company as secretary and general manager until it was purchased by the Underwood-Elliott-Fisher Co., in 1927.

The Rockford Milling Machine Co., and the Rockford Tool Co., were incorporated in 1926 into the Sundstrand Machine Tool Co., and Mr. Olson became president and general manager.

Mr. Olson had served on the boards of a score of industries and businesses, but in recent years he relinquished most of the directorships. He continued, how-

ever, as a director of the Third National Bank. He was a member of the wartime advisory board of the Chicago Ordnance District which had a sub-office in Rockford. He also was a director and active member of numerous charitable, fraternal and social organizations.





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Hugo L .Olson

Paul Fielden

#### PAUL FIELDEN DIES

Paul Fielden, 62, director of purchases of Norton Company, Worcester, Mass. and former president of the National Association of Credit Men, died February 6, 1949, in Worcester. Mr. Fielden was associated with Norton Company for almost 30 years, joining it as assistant credit manager in 1919. He became credit manager in 1929 and was named director of purchases in 1941.

Widely known in credit circles, he was made a director of the National Association of Credit Men in 1934. The following year he was elected vice-president and gained the association's highest office in 1937. He was secretary and president of Worcester County Association of Credit Men for many years, and a member since 1915.

#### JACOB NELSON

The A. H. Nilson Machine Company, nationally known Bridgeport firm, has announced with sorrow, the recent death of Mr. Jacob Nelson, its president and treasurer. Mr. Nelson died at Bridgeport, Conn., on Thursday, March 10, 1949.

#### CHARLES H. WILSON, INVENTOR, DIES

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Charles H. Wilson, who perfected the Rockwell Hardness Tester, died in a hospital March 9th, 1949. His home was in Greenwoods Road East, Norfolk, Conn.

The Rockwell Test was devised by S. P. Rockwell, to measure the hardness of metals by pressing a diamond-pointed cone into a metal under a fixed load to a depth depending on its resistance to penetration, the relative resistance to penetration being automatically registered on a dial. It is now the standard method of determining metal hardness.

Mr. Wilson began development of the Rockwell Hardnesss Tester in 1920 and carried on the business under the name of Wilson Mechanical Instrument Company. The corporation was sold to the American Chain & Cable Company of Bridgeport, Conn in 1944. Mr. Wilson was chairman of the board of the Wilson Mechanical Instrument Company when he died.

During World War II, he contributed heavily to the development of microhardness testing and introduced the Tukon Tester, which was designed especially for this field.

Charles H. Wilson was graduated from Columbia University School of Mines in 1902, and four years later began his business career with the formation of the Wilson Maeulen Company to manufacture pyrometers. Mr. Wilson bought out his partner after a few years and ran the business until 1932 when it was sold to the Foxboro Company, Foxboro, Mass.

#### IRVING LEWIS BURROWS

Irving Lewis Burrows, of Behr-Manning Corporation, died March 30 at the Samaritan Hospital, Troy, N. Y., after a long illness. He was 62 years of age. Mr. Burrows was a native of Schenectady, N. Y., the son of Mrs. Emily Burrows and the late Charles Burrows. Immediately upon his graduation from Schenectady schools, he took and intense interest in mechanical engineering, which was to become his life's work.

For many years he was connected

with Hammacher, Schlemmer of New York and on June 26, 1922, he joined the Manning Abrasive Company of Troy which, in 1929, became the Behr-Manning Corporation. For many years he was manager of the Equipment and Products Engineering Division of the company, and in December, 1947, Mr. Burrows received Behr-Manning's highest award, a 25-year gold service emblem in recognition of loyal and faithful service to the company.

Mr. Burrows' outstanding mechanical inventiveness and vision were recognized by Behr-Manning and his was the responsibility of organizing and developing its Equipment and Products Engineering Division. In this capacity, he was responsible for the introduction of many new mechanical operations employing sandpaper and abrasive cloth for grinding, sanding and polishing all kinds of materials. One of his most outstanding accomplishments, however, was in the stainless steel field in which he introduced new machine methods of finishing and polishing that have been widely recognzed.



## Mow! No. 1 Dodge A COMPACT, LOWPRICED VERTICAL MILLING MACHINE

This new and practical machine can handle virtually any job. It's easy to operate — with sensitive accurate control. Takes up only 18'' x 15'' of space. 68'' high; weighs approx. 365 lbs. Size of table, 15'' x  $4\frac{1}{4}''$ . Equipped with 1/3 h.p. single phase motor. 1750 R.P.M.



- Capacity:
  ½" in tool
  steel
- For Vertical Milling, Angular Milling, Horizontal Boring
  - Swivel Graduated Head
- Timken Bearing Spindle
- Low in Price

Other features! Price complete with 1/3 h.p. Single Phase Motor.

#### \$375.00

EXTRAS AVAIL-ABLE: 6" rotary table: \$27.50. 4" swivel graduated vise: \$20.00.

Send for complete information.

#### ALLIED MACHINERY CO.

548 W. Monroe

Chicago 6, III.

#### WINFRED W. ELLIOTT

The Elliott Manufacturing Company, Binghamton, N. Y. makers of flexible shafting and equipment, regretfully announced the death of its founder, Mr. Winfred W. Elliott, on January 26, 1949. Active in the flexible shaft industry since 1898, Mr. Elliott was a partner in the Binghamton Flexible Shaft Company from 1920 to 1931, when he sold out to establish the present organization in 1932.

Last July he sold his interest to the remaining partners, his son, Boyd W. Elliott, and his son-in-law, Wilbur J. Kupfrian, in charge of sales and engineering respectively, who will continue the business as a partnership.

#### ERTIE L. FOREMAN, 1893 - 1949

Ertie L. Foreman, manager of the Los Angeles sales office of Whitman & Barnes, Division of United Drill and Tool Corporation, died suddenly on February 9, 1949, while engaged in a telephone conversation with his home office in Detroit.

He was born in Florida in 1893; coming to Detroit in 1910, Mr. Foreman began his career as a factory employee with Detroit Twist Drill Company. He rose to the position of foreman, and in 1922 he was placed in charge of the Canadian Detroit Twist Drill Company, at Walkerville, Ontario. He continued on in this capacity following the merger of this firm with Whitman & Barnes, and in 1930 was transferred back to Detroit to take over as plant superintendent.

In 1932, the Detroit executive engaged in sales work, and after several years as salesman in Michigan, was sent to Philadelphia, and shortly thereafter became manager of the New York office. Mr. Foreman was transferred in 1941 to the Pacific Coast, and when Whitman & Barnes' branch office and warehouse was opened in Los Angeles in 1944, he was appointed manager.

Ertie L. Foreman left behind him a record of nearly 39 years of faithful service; his untimely death at the age of 55 was a shock to his associates, by whom he will be sorrowfully missed. Appointments & Promotions

Clifford J. Baxter has been appointed general sales manager of the Gisholt Machine Co., Madison, Wis. Howard V. Myers will succeed Mr. Baxter as the new district manager of the Chicago office; he will be assisted by Erv A. Huza, formerly with the Philadelphia and Kansas City offices.



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Clifford J. Baxter J. P. Vederko

The Hydraulic Press Mfg. Company, Mount Gilead, Ohio, announces the appointment of J. P. Vederko as Works Manager, succeeding E. J. McSweeny, formerly Vice President in Charge of Manufacturing, who resigned on February 12, 1949.

The BiggStava Company, Los Angeles, announces the appointment of F. Halsey Denman as sales manager for the company's line of K-J Quick Change Lathe Tools.

Arthur C. Heller was recently elected president of Heller Brothers Co., with factories in Newcomerstown, Ohio, and Newark, N. J. At the same time, James G. Henry, Jr., was elected vice president and secretary, Lawrence B. Heller, assistant secretary, and Miss Anna W. Ibach, treasurer.

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MANUFACTURING DIVISION 4409 WEST KINZIE ST., CHICAGO 24, ILL. Donald B. Huntting, president of The E. Horton & Son Company, Windsor Locks, Connecticut, has announced the appointment of Joseph L. Lynch as advertising manager, Paul E. Dillberg as superintendent of the Drill Chuck Division, and Steven J. Ludwin as superintendent of the Lathe Chuck Division.





Joseph L. Lynch

Paul E. Dillberg

The Hy-Pro Tool Co., New Bedford, Mass., a division of Continental Screw Company, announces the promotion of Robert A. Smith to sales manager.

Roger F. Waindle, general manager of the Industrial Products Division of the Elgin National Watch Company, was elected to the Board of Directors of the American Society of Tool Engineers at the society's recent annual meeting in Pittsburgh.





Steven J. Ludwin

Roger F. Waindle

Bent Laune, president, All-State Welding Alloys Co., White Plains, N.Y., has recently announced the appointment of Thomas E. Berry as manager of domestic sales.

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DEVELOPMENT COMPANY

348-7 First Natl. Bank Bldg. Colorado Springs. Colorado Scully-Jones and Company, Chicago, announces the appointment of Bernard R. Better as director of research.



of y, rs



Bernard R. Better



Roy E. Jones

Link-Belt Company announces that Roy E. Jones has been appointed export manager of the company, with headquarters in New York; Jones succeeds Carl A. Woerwag, who is retiring due to ill health.

George G. Raymond, Jr., sales manager at Lyon Raymond Corporation, Greene,

N. Y., was recently elected to the office of vice president by the Board of Directors. Mr. Raymond will also continue to act as sales manager.

Frank H. Carrier, vice president of Marvel Tool & Machine Company, St. Clair, Mich., announces the appointment of G. Henry Keeton as exclusive Michigan representative for the sale of Marveco Live Centers.

The Billings and Spencer Company, Hartford, Conn., appoints John F. Whalen as assistant sales manager of the Merchandise Tools Division,

L. C. Newton, St. Paul, Minn., has been appointed sales representative for North Dakota and Minnesota by Titan Manufacturing Co., Bellefonte, Pa., manufacturers of brass and bronze products.

Appointment of Paul E. Lees as vice president in charge of sales is an-nounced by Standard Tool Co.'s (Cleveland) president, R. R. Higgins.



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4540 W. BURNHAM ST. . MILWAUKEE 14, WIS.

The Hydraulic Press Manufacturing Co., Mount Gilead, Ohio, announces the appointment of John M. Dolan as vice president in charge of sales.







Earl H. Kaeselau

Appointment of Earl H. Kaeselau, specialist in quality control, to the sales and service staff of Hartfield-Healy Co., Buffalo, it was announced by Edwin E. Healy, sales manager of the company.

Globe Products Mfg. Co., Los Angeles, announces the election of W. B. Merriam as president; R. E. Lockard as vice president in charge of sales, Thomas O'H. McArdle was selected to head the contract division.

Gordon Simons is now employed as sales manager for The Beryllium Corporation, Reading, Pa.

H. H. Mosher has been named manager of carbide sales, Detroit District, for the Firth Sterling Steel and Carbide Corp., McKeesport, Pa.

Seward T. Salvage has been named sales promotion manager of Timken Roller Bearing Co., Canton 6, Ohio. T. F. Rose has become manager of Timken Roller Bearing Service and Sales, Ltd., Toronto, Ontario; H. C. Telford becomes the new Cincinnati branch manager, replacing Rose.

Sam Tour & Co., Inc., New York engineers and metallurgists announce the reorganization of the Mechanical Engineering Department under the supervision of John J. Meadows, who has recently joined the organization.

Syntron Company, Homer City, Pa. announces the appointment of George L. Chedsey as supervisor of mining equipment; E. J. McIlvaine has been appointed as junior salesman in the Vibratory Material Handling Division of the St. Louis office; John C. Mitchell will take over power tool sales in the Boston office. A. C. Staley, Jr. has been appointed junior salesman in Vibratory Material Handling Division in the Cleveland office.

Star Electric Motor Company, Bloomfield, N. J. announces the election of Harris T. Shea as president, succeeding Elvin E. Hallander, who was elected chairman of the Board of Directors.

Optimus Equipment Co., Matawan, N. J. has announced the appointment of Melville Morris as executive vice president and member of the Board of Directors. Also were announced the appointments of A. Otto Millen as middle West district supervisor, and the L. G. Evans Company as representatives for Illinois, Indiana and Wisconsin.



Melville Morris



R. F. V. Stanton

R, F. V. Stanton, vice president in charge of manufacturing of American Machine and Foundry Co., New York, has been elected a member of the firm's Board of Directors, it was announced recently by Morehead Patterson, AMF chairman.

Richard H. Koehler has been appointed advertising manager of the Stearns Magnetic Mfg. Co., Milwaukee, according to an announcement from R. N. Stearns, general manager.

The appointment of Frederick S. Bartlett as factory manager of the Bristol, R. I., plant of United States Rubber Company was announced recently by C. W. Higbee, manager of the wire and cable department.

Dr. Eugene L. Woroch has joined the staff of the Bjorksten Research Laboratories, Madison, Wis., as a section leader.

The election of Stanley M. Hunter by the Board of Directors to fill the newly-created position of Executive Vice-President is announced by H. O. Washburn, president of the American Hoist & Derrick Company, St. Paul, Minn.



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Stanley M. Hunter



Vernon H. Olson

Vernon H. Olson has recently been appointed General Sales Manager for W. O. Barnes Company, Inc., manufacturers of hack saw and band saw blades.

Link-Belt Company, Chicago, announces the appointment of J. H. Oakes as sales manager of enclosed drives, with headquarters at the company's Philadelphia plant; he will be assisted by Harry F. Kurz as representative, with headquarters at the Pershing Road plant in Chicago.

John P. Roche, vice president in charge of sales of the Heppenstall Company, Pittsburgh, has announced the appointments of S. J. Mergenhagen as assistant sales manager and R. H. Musser, succeeding Mergenhagen as district sales representative in Philadelphia.

The K. P. Wesseling Company, St. Louis, Mo., has been appointed exclusive sales representative for Illinois Tool Works, Chicago, in the St. Louis area, according to a recent announcement by E. E. Valy, sales manager.

Amgears, Inc., Chicago gear manufacturers, have announced the appointment of the Vee Mac Company, Rockford, Ill., as its Illinois customer representative and the Allied Transmission Equipment Co., Kansas City, Mo., as representatives in Missouri.

The Klinger-Dills Company, Dayton, O., has been appointed exclusive distributor of the belting division of the Russell Manufacturing Co., Middletown, Conn.

Tool Equipment Company, 24 So. Pulaski Road, Chicago 24, Ill. have recently been appointed exclusive factory representatives for Illinois and Iowa by the Multi-Hydromatic Welding & Mfg. Co., East Detroit, Mich.

C. E. Gobeil Company, St. Paul, Minn. have been appointed exclusive representatives for Hydro-Line Manufacturing Co., in the states of Minnesota, North Dakota, South Dakota and part of the state of Wisconsin.

Tools, Incorporated, has been appointed exclusive Philadelphia representative for Illinois Tool Works, Chicago, according to a recent announcement by E. E. Valy, sales manager.

The appointment of J. R. Elder as field representative for The Tomkins-Johnson Co., Jackson, Mich., was announced by D. M. J. Tracey, general manager.

The Sterling Grinding Wheel Division of the Cleveland Quarries Co., Tiffin, Ohio, has made the announcement through its president, Arthur E. Tulk of the following men to managerial positions: Ralph H. Lott as co-ordinator of sales; Arthur J. Schneider as general sales manager, with managerial control of the sales staff; William F. Schlick as district manager of the company's Chicago branch, filling the position vacated by Mr. Lott.

## Mechanics Through the Ages





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Abrasive Cutting Machines, 150, 324
Abrasive Cloth, Paper, Disc, Belts,
Wheels, Stones, Etc., 2, 20, 32-B, 32-C,
34, 133, 138, 165, 194, 195, 266, 301,
317
Air Operated Equipment, 32, 37, 45, 96,
172, 219, 230, 260
Alloys, 263
Angles, 98, 182, 207, 218
Anti-Friction Compound, 240
Arbors, 90

Backrests, 40 Balancing Machines, 23, 264 Balancing Ways, 297 Beading Machines, 169 Bearings, Oilless, 224 Bearings, Roller, 143 Bending Equipment, 22, 33, 296, 315 Bits, 15, 305 Blades, Power, 317 Blocks, V., 98 Bolts, 197 Books, 7, 152 Boring Bars and Tools, 29, 80, 86, 123, 234, 255, 267, 287 Boring, Drilling and Milling Machines, Boring, Drilling and Tapping Machines, Boring Heads, 123, 234, 267, 287 Boring Machines, 49, 302 Box Tools, 29, 186 Brakes, Press and Bending, 11, 22, 315 Bottoming Tools, 234 Broaches, 93, 214 Broaching Machines, 226, 260 Buffing Machines, 28, 86, 313, 324 Burs, 137 Bushing, Ball, 144 Bushings, Drill Jig, 173, 233

Cabinets, Small Tool, 238 Calipers, 213 Carbide Tools, 4, 43, 60, 80, 126, 137, 177, 230 Center Drills, 305 Centers, Live, 38, 61, 175, 198, 202, 211, 245 Centering Machines, 184 Cerro Alloys, 263
Chasers, 29, 181, 231
Checking Devices, 184, 297
Chucking and Indexing Fixtures, 270
Chucking Machines, 7, 25, 228-A
Chucks, 42, 45, 57, 59, 74, 203, 221, 287
Chucks, Air Operated, 37, 221
Chucks, Collet, 219, 241, 265
Chucks, Drill, 147, 253, 262, 276
Chucks, Magnetic, 59, 69, 74, 278
Clamps, 82, 155, 175, 241
Clutches, 62, 223
Collets, 57, 241
Comparators, 58, 213
Counterbores, 305
Counting Devices, Speed, 143, 289
Couplings, Flexible, 220, 223
Couplings, Torque, 147
Crimpers and Beaders, 13
Cross Slides, 86
Cut-off Machines, 150, 174, 228-D, 324
Cutters, Rod, 22, 169, 174, 205
Cutting Fluid and Oils, 293, 299
Cutting Fluid and Oils, 293, 299
Cutting Fluid and Oils, 293, 399, 316, 317
146, 158, 165, 298, 309, 316, 317
Cylinders, Hyd-aulic and Pneumatic, 35, 37, 45, 96, 260

239, 305
Demagnetizers, 38, 59
Designers, 232
Dial Indicators, 148
Diamond Powder, 159, 232, 256
Diamond Tools, 142, 186, 232
Die Casting, Machines, 56
Die Castings, 48
Die Feeds, 47
Die Filers, 179
Die Heads, Threading, 188
Die Holders, 204
Die Miking Machines, 31
Die Sets, 75, 193, 244, 253
Dies, 78, 156, 187, 243
Dies, Round Split, Button, 225
Dividing Heads, 59, 247
Dressing Fixtures, Grinding Wheel, 133, 272
Drill Heads, 153, 190, 206, 250, 253, 259
Drilling Fixtures and Jigs, 90, 235

Deburring Machines and Tools, 20, 207,

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Drills, Electric, 136, 157, 323, 324
Drives, 68, 220, 261 Duplicating Machines 32-D, Inside Back Cover Dust Control Equipment, 38, 70, 208, 216 Envelopes, Blueprint, 247 Etchers, 38
Ejector Type Tools, 79
Extrators, Tap, 247
Eyelet Attaching Machines, 189 Facing Tools, 126, 267 Feeders, Work, 44, 47, 169, 160, 217, 248 Files, 12, 14, 66, 141 Files, Rotary, 313 Filing Machines, 12, 179, 254 Filters, 151 Flexible Shaft Equipment, 24, 85, 137, Flexible Shaft Machines, 24, 85, 259, 311, 313 Floor Resurfacing, 191 Form Tools, 158, 305 Furnaces, Heat Treating, 76, 161, 261, 304, 319 Gage Blocks, 98, 213 Gages, 42, 58, 148, 173, 213 Gaskets, 146 Gear Checkers, 213 Gear Cutting Machines, 30, 81 Gear Heads, 183 Gears, 253 Gearshift Units, 68 Grinders, Air, Portable, 172 Grinders, Bench, 21, 54, 181, 313, 324 Grinders, Carbide, 28, 180, 186 Grinders, Centerless, 8, 9 Grinders, Cylindrical, 18, 19 Grinders, Disc, 53 Grinders, Double, 27 Grinders, Drill, 31, 67, 83, 154, 240 Grinders, Face Mill, 31 Grinders, Flexible Shaft, 24, 85, 137 Grinders, Flute, 84 Grinders, Hydraulic, 8, 9 Grinders, Pedestal, 43, 67 Grinders, Portable Electric, 53, 313, 323, 324 Grinders, Profile, 154, 179 Grinders, Saw, 295 Grinders, Surface, 21, 83, 266 Grinders, Tap, 83 Grinders, Tool, 18, 19, 43, 67, 83, 180, 274, 324 Grinders, Tool and Cutter, 28, 31, 32-D, 43, 67, 83, 154, 274 Grinders, Tool Post, 324 Grinders, Universal, 18, 19 Grinding, Boring, Milling & Drilling Attachments, 18, 19, 84, 90, 125 Grinding Wheels, 2, 32-B, 32-C, 165, 194, 195 Guards, 128, 286 Guides, Saw, 26

Hammers, Chipping, 32

Hammers, Rawhide, 52 Handling Equipment, 130 Hand Wheels, 218 Heads, Drill, 153, 206, 262 Heads, Tap, 262 Hinges, 275 Holders, Tap, 251, 279 Holders, Tool, 4, 29, 86, 168, 251 Holding Equipment, 40, 265 Honing Machines, 64, 65 Hopper Feed Units, 281 Hydraulic Equipment, 20, 35, 37, 96 Identification Die, 205, Inside Back Cover Indexers, 92, 97 Indexing Fixtures, 230, 254 Inspection and Measuring Devices, 58, 143, 148, 184, 189, 192, 247, 253, 274 Jig Borers, 140 Jigs, Drill, 90, 235 Jig Grinding Attachment, 125 Jigs and Fixtures, 42, 90, 204, 230, 235 238, 253 Joints, Universal, 15, 139, 220 Keyseaters, 226, 253 Keyway Cutting Equipment, 89, 181, 305 Knobs, 218 Knurls and Equipment, 257 Lapping Equipment & Compounds, 228, 256, 305 Lapping Machines, 8, 9, Laps, 132, 169 Lathe Attachments, 16, 167, 168, 174, 241 Lathe Converters, 181 Lathes, Automatic, 23, 32-D Lathes, Block Gap, 229 Lathes, Precision and Toolroom, 3, 16, 32-A, 91, 170, 261 Lathes, Production, 1, 16, 25, 32-A, 91, 145, 170, 229, Ir.side Back Cover Lathes, Speed, 305 Lathes, Threading, 284 Lathes, Turret, 3, 7, 23, 25 Layout Materials, 205, 231, 242 Levers, 218 Lighting Equipment, 270 Lubricants, 6, 240, 299 Lubricators, 151
Lubricators, 151
Mandrels, 64, 65, 234, 258, 301, 305, Marking Devices, 156, 236
Masonry Drills, 158 Micrometers, 213, 259, Microscopes, 213 Milling Cutters, 60, 230, 298, 305, 309, 316, 317 Milling Heads, 92, 126, 166, 183 Milling Machine Attachments, 63, 123, 128, 166, 181, 241 Milling Machines, 32-D, 73, 92, 140, 170 Milling Machines, Vertical, 92, 302 Milling Machines, Bench, 176, 261 Milling Machines, Hand, 128 Milling Machines, Horizontal, 32-D, 49, 73 Mills, Hollow, 126, 177 Motor Drives, 261 Motors, 259 Notching Units, 22, 237 Oil Groovers, 283 Optical Inspection Devices, 192, 213, 259, 274 Pans, Tote, 253

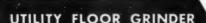
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Parallels, 182, 218 Patents, 253 Perforated Metals, 277 Pipe Bending Machines, 296 Pipe Bending Machines, 296
Plates, Surface, 133, 182, 183, 218
Pneumatic Tools, 32, 172, 260
Polishing Machines, 20, 313
Portable Electric Tools, 24, 53, 54, 77, 85, 136, 157, 313, 323, 324
Portable Elevators, 120, 287
Portable Tool Accessories, 157
Prevision Parts, 233, 261
Prevision Parts, 233, 261 Portable Tool Accessories, 157
Precision Parts, 233, 261
Press Brakes, 11, 22, 315
Presses, Arbor, 249, 258
Presses, Drill, 259
Presses, Hydraulic, 13, 95, 96, 217, 228B, 228-C, 260, 297
Presses, Punch, 201, 209, 249, 290
Pulleys, Variable Speed, 220 Presses, Punch, 201, 209, 29, Pulleys, Variable Speed, 220 Pulleys, Coolant and Lubrica Pumps, Coolant and Lubricant, 37, 39 Pumps, Coolant and Lubricant, 37, 39 Pumps, Hydraulic, 215 Pumps, Vacuum, 215 Punches, 78, 187, 203, 243 Pyrometers, 253 Quick Change Tools, 29 Racks, 223, 247, 304 Radius Tools, 125, 272 Rawhide Products, 52 Reamers, 136, 158 Rectifiers, 59
Reels, 44, 47, 169, 180, 217
Riveting Machines, 94, 239, 243 Roll Feeds, 44, 176, 217, 270 Roll Forming Machines, 169, 228-D Safety Equipment, 286 Sanders, Portable, 313 Saw Blades, Band, 14, 36, 55, 66, 146, 196, 321 Saw Blades, Hack, Inside Front Cover, 14, 36, 66, 146, 321 Saw Blades, Slitting 10, 14, 305 Saw Equipment, Band, 26 Saw Sharpeners, 295 Sawing Machines, 162, 254 Sawing Machines, Band, Inside Front Cover, 59, 196, 254 Sawing Machines, Hack, Inside Front Cover, 59, 196, 254, 290 Saws, Circular, 10, 14, 66, 162 Scrap Cutters, 176 Scrapers, Power, 297 Scrapers, Power, 297 Screw Drivers, Electric, 77, 136, 313, 323, 324 Screw Driving Machines, 244 Screw Machine Products, 272 Screw Machines, Automatic, 17, 56, 71, 81, 88, 145, 228-A Screw Machines, Hand, 46, 86, 239 Screws, Cap, Set, Socket & Machine, 178, 242, 253, 272 Services; Milling, Grinding, Lapping, Rebuilding, Repairing, Business, etc. 173, 227, 247, 272, 313

Set-up Equipment, 82, 155, 175, 292 Shaft Racks, 247 Shapers, 11, 16, 32-A, 170, 290

Shavers, 239 Shearing Machines, 11, 22, 33, 228-B, 228-C, 249, 282 Shear, Electric, Hand, 54, 171, 185 Shears, Throatless, 282 Shears, Portable, 185 Sheet Metal Working Machinery, 169, 228-B, 228-C Shims, 303 Sleeves, Squared Hole, 214 Sockets, 15 Soldering Tools, 187 Spacers, Arbor, 146 Special Machinery, 23, 49, 58, 81, 102, 253 Special Tools, 158, 189, 232 Speedometers, 289 Speed Indexers, 97 Speed Reducers, 210 Spindles, 41 Spotters, 297 Sprockets, Back Cover Stampings, 230 Stamps, 156, 236, 245 Steel and Steel Stock, 14, 102, 134, 152, 199, 303 Stock Stands, 44, 169, 176, 180, 217 Superfinishers, 23 Swagers, 253 Tables, Elevating, 120, 221, 287 Tables, Rotary and Index, 92, 248, 254 Taper Attachments, 168
Tap Extractors, 247 Tap Guides, 147, 204 Tappers, 250, 313 Tappers, Hand, 204 Tapping Attachments, 51, 72, 206, 225, 250, 262, 279, 294 Tapping Machines, 51, 120, 262, 279 Taps, 72, 305 T-Bolts, 197 Test Indicators, 247 Threaders, Hand, 181 Threading Attachments, 181, 225, 267 Tool Posts, 40 Transfer Processing Machines, 88 Transformers, 50 Traps, Air, 258
Tube Mill Machinery, 228-D Tubing Cutters, 169, 174, 205 Turrets, Bed, 167 Turning Machines, 1 Turrets, Lathe, 86, 167 Turrets, Tailstock, 167 Turrets, Tool Post, 167 Vacuum Cleaners, Industrial, 270 Valves, 36, 37, 96, 151, 217, 219, 230, 258 Variable Speed Transmissions, 220 Verniers, 213 Vises, Bench and Machine, 59, 87, 164, 167, 190, 200, 222, 223, 238, 247, 257, 292 Welding Equipment and Supplies, 50, 228-D. 285 Wrenches, 15, 82

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3	1/4	î	4.10	6	1/4	1 or 11/4	11.00
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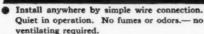
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## Index to Advertisers

Abor Engineering Works 89	Circular Tool Company
Aber Engineering Works 89 Abrasive Machine Tool Company 266 Abrasive Products Company 138	Circular Tool Company 10 Clausing Manufacturing Company 2
Abrasive Products Company138	
Ace Abrasive Laboratories256	Cleveland Automatic Machine Company 56
Ace Abrasive Laboratories       256         Acme-Danneman Company       253         Acme Industrial Company       233	Cleveland Automatic Machine Company
	Commander Manufacturing Company250
Aget Detroit Company 208  Air Way Pump & Equipment Company 230	Commander Manufacturing Company 250 Cone Automatic Machine Company 71 Continental Machine Company 169 Commander Clubb Company 169
Air Way Pump & Equipment Company230	Continental Machine Company169
Amed Machinery Company	Cook and Chick Company 02
Allied Products Corporation	Conway Clutch Company 62 Cook and Chick Company 244 Cooley Electric Manufacturing Corporation 319
	Courter Machine Company, James284
Almond Manufacturing Company, T. R203	Covel Manufacturing Company154
American Chain & Cable Company	Cullman Wheel Company
Almond Manufacturing Company, T. R. 203 American Chain & Cable Company (Campbell Machine Division) 150 American Pipe Bending Machine Company 296 American Tool Works Company Inside Back Cover	Creste Metal Products Company 238 Cullman Wheel Company Back Cover Curtis Universal Joint Company 139 Cushman Chuck Company 45
American Tool Works Company Inside Back Cover	Cushman Chuck Company 45
Anderson Brothers Manufacturing Company201	
Apex Machine Tool Company	
Arguto Utiless Bearing Company	
Armstrong Brothers Tool Company 4	D
Associated Traders Inc	
Arguto Oilless Bearing Company 224 Armstrong-Blum Mfg. Co. Inside Front Cover Armstrong Brothers Tool Company 48 Associated Traders Inc. 183 Atkins & Company, E. C. 321	
Atlantic Gear Works	Dahlstrom Manufacturing Company147
Auto Mounting & Manufacturing Company215	Dallett Company
	Danneman Die-Set. Division
	Davis Development Company
R	Dayton Rogers Manufacturing Company230
ь	Depison Engineering Company 13
	Detroit Power Screwdriver Company 281
Baldor Electric Company 28	Dearborn Company, J. W. 270 Denison Engineering Company 12 Detroit Power Screwdriver Company 281 Detroit Reamer & Tool Company 84 Detroit Stamping Company 155
Bartelt Engineering Company	Detroit Stamping Company155
Baumbach Manufacturing Company, E. A244	Diamond Tool Research Company
Beambach Annuacturing Company 264 Behr Products Company 234 Behr Products Company 234 Bemis & Call Company 63 Bereily Shear Manufacturing Company 155	Disston & Sons, Henry
Bemis & Call Company	DoAll Company
Beverly Shear Manufacturing Company185	Dorman Machine Tool Works
	Dreis & Krump Manufacturing Company315
Bokum Tool Company 80 Breuer Electric Manufacturing Company 270	Ducon Company
Bridgeport Machines Inc. 87	Durant Manufacturing Company289
Bridgeport Machines Inc. 87 Brown & Sharpe Manufacturing Company18-19	Dumore Company     53       Durant Manufacturing Company     289       Dykem Company     242
Brown Engineering Company 223 Buffalo Forge Company 33	
Buffalo Forge Company	
Buffalo Machinery Company 147 Bullard Company 25 Burg Tool Manufacturing Company 251	
Burg Tool Manufacturing Company251	E
Burke Machine Tool Company176	
Burke Machine Tool Company 176 Burr & Son, J. T. 253 Busch Company, J. C. 182	D T 1 - 1 - 0 100
Busch Company, J. C182	Economy Engineering Company         130           Economy Machine Products Company         242           Economy Tool & Machine Company         173           Eisler Engineering Company         250           Electro-Mechano Company         259           Elgin Tool Works         294           Elox Corp.         164
	Economy Tool & Machine Company
	Eisler Engineering Company 50
C	Electro-Mechano Company259
•	Elgin Tool Works
Campbell Machine Division	Engis Equipment Company
(American Chain & Cable Company150	Erickson Tools Division97-255
Cardinal Machine Company238	Esco Engineering Company 235 Etteo Tool Company 262
Carpenter Steel Company	Ette 1001 Company
Carter Products Company 26 Center Scope Products 274	
Cerro-de-Pasco Copper Corp263	
Chaso Tool Company	F
Centrel-Basco Copper Corp. 263 Chaso Tool Company 188 Chicago Broach Machine Company 189 Chicago Die Casting Manufacturing Company 48 Chicago Manufacturing Company 48	
Chicago Manufacturing & Distributing Co 6	
Chicago Manufacturing & Distributing Co. 6 Chicago Rawhide Manufacturing Company 52 Chicago Rivet & Machine Company 94 Chicago Wheel & Manufacturing Company194-195 Cincinnati Bickford Tool Company104 Cincinnati Electrical Tool Company 324 Cincinnati Milling Machine Company 8-9	Fakes & Company, Jos. B257
Chicago Rivet & Machine Company 94	Falls Products Company287
Cincinnati Rickford Tool Company	Falls Products Company 287 Famco Machine Company 249 Federal Foundry Supply Company 205
Cincinnati Electrical Tool Company324	Federal Tool Corporation 132 Federal Tool & Manufacturing Company290
Cincinnati Milling Machine Company8-9	Federal Tool & Manufacturing Company290

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319

Fellows Gear Shaper Company         30           Fiske Brothers Refining Company         299           Flexrock Company         191           Foredom Electric Company         85           Fray Machine Tool Company         166           Fulflo Specialties Company         39	Langelier Manufacturing Company         253           LaPeer Manufacturing Company         82           Lasay Tool Company         204           Leiman Brothers         215           Lenox Instrument Company         192           Lewthwaite Machine Company         T           Lima Electric Motor Company         68           Linderme Machine & Tool Company         153
G	Littell Machine Company, F. J. 217 Logan Engineering Company 32A
G. & H. Manufacturing Company         230           Gairing Tool Company         126           Gailand-Henning Manufacturing Company         35           Gailmeyer & Livingston Company         83           Gardner Machine Company         27           Gisholt Machine Company         23           Globe Products Manufacturing Company         86	Lovejoy Flexible Coupling Company 220 Lovejoy Tool Company 298 Lucas & Son, Incorporated, J. L. 253 Luma Electric Equipment Company 187 Lyon-Raymond Corporation 287
Gorton Machine Company, George 32-D Graham Manufacturing Company 167 Grant Manufacturing & Machine Company 243 Greaves Machine Tool Company 247	м
Gisholt Machine Company 23 Globe Products Manufacturing Company 86 Gorton Machine Company, George 32-D Graham Manufacturing Company 167 Grant Manufacturing Company 167 Greares Machine Tool Company 247 Greenerd Arbor Press Company 260 Greenlee Brothers & Company 88 Grob Brothers 254 Grobes File Company of America 12	McDonough Manufacturing Company         240           Machine Products Corp.         218           Madison-Kipp Corporation         172           Madison Manufacturing Company         90           Mall Tool Company         323           Manufacturers Products         174
н	Mail Tool Company         323           Manufacturers Products         174           Maplewood Machinery Company         169           Marshall Steel Company         199           Marshalltown Manufacturing Company         282           Martin Machine Works, J. E.         247           Master Manufacturing Company         181           Master Taper Company         168           Master Tool Company         292
Hager & Son, E. F	Master Taper Company         168           Master Tool Company         292           Mead Specialties Company         248           Merz Engineering Company         58           Meyers Company, W. F.         125           Michigan Chrome & Chemical Company         295           Michigan Drill Head Company         190           Midwest Tool & Engineering Company         221           Millers Falls Company         77           Milwaukee Chaplet & Manufacturing Company         179           Modern Tool Works         57           Monarch Machine Tool Company         189           Morton Machine Works         175           Motch & Merryweather Machinery Co. The         162           Motor Tool Manufacturing Company         198
1	N
Ideal         Industries         38           Index         Machine         Company         92           Industrial         Products         146           Ingersoll-Rand         136	National Acme Company         228A           National Machine Tool Co.         164           Nebel Machine Company         229           Nelco Tool Company         60           New Britain Machine Company         60
,	(New Britain Gridley Division) 17 New Method Steel Stamps, Incorporated 245 Niagara Machine & Tool Works 228-B-228-C Nichols-Morris Corporation 73
Johnson Gas Appliance Company	New Britain Machine Company         17           New Method Steel Stamps, Incorporated         245           Niagara Machine & Tool Works         228-B-228-C           Nichols-Morris Corporation         73           Nicholson & Company, W. H.         258           Nicholson File Company         141           Nielsen, Incorporated         245           Nielsen Tool & Die Company         253           Nobur Manufacturing Company         239           Norgren Company, C. A.         151           Norton Company         32-B-32-C-133           NuTangs Inc.         227
к	Norton Company 32-B-32-C-133 NuTangs Inc. 227
Kellner Tool & Machine Company241 Kennametal, Incorporated230	0
L	Oliver Instrument Company
L-W Chuck Company	Oliver Instrument Company 31 Olson Industrial Products, Incorporated 183 O'Neil-Irwin Manufacturing Company 22 Ottemiller Company, Wm. H. 272 Ottney Company, L. E. 294



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P	
Pannier Corp.         156           Pini Manufacturing Company, F. 265         265           Plunket Machine Company, J. E. 206         260           Pope Machinery Corporated         260           Pope Machinery Corporation         41           Pratt & Whitney Division         137           Precise Froducts Company         157           Precision Steel Warehouse Inc.         363           Products Company         275           Products Safety Chack Company         75           Prosuct & Scale Warehouse Inc.         30           Product Associated Company         75           Prostrom Machine Company         51           Proton Machine Company         51           Protoneter Instrument Company         253	Stuart Oil Company, D. A.   293
Pyrometer Instrument Company	Tamms Silica Company 231 Tannewitz Works 55 Tomkins-Johnson Machine Company 309 Thompson & Son, Henry G. 36 Thomson Industries 144
Quality Chaser Company231 Queen City Machine Tool Company274	Tamms Silica Company 231 Tannewitz Works 55 Tomkins-Johnson Machine Company 309 Thompson & Son, Henry G. 36 Thomson Industries 144 Timesaver Products Company 228 Torit Manufacturing Company H. P. 239 Tree Tool & Die Works 23 Treichler, L. F. —Precision Grinding 202 Troyke Manufacturing Company 247-254
R	U
R & L Tools         40           Racine Tool & Machine Company         81           Reading Machine Company         226           Redmer Air Device Corp.         219           Reich Manufacturing Company, J. R.         247           Reltool Corp.         305           Bice Pump & Machine Div.         305	U. S. Diamond Wheel Company 186 U. S. Drill Head Company 206 U. S. Electrical Tool Company 313 U. S. Steel Supply Company of Delaware 134 Universal Engineering Company 168
Reltool Corp.       305         Rice Pump & Machine Div.       (Milwaukee Chaplet)       179         Rivett Lathe & Grinder Inc.       91         Robbins Company, Omer E.       69         Roll Feeds Corporation       270         Rouse & Company, H. B.       128         Royal Products       175         Ruleta Company       169         Ryerson & Son, Incorporated, Jos. T.       102	Veeder Root Inc.         143           Victor Machinery Exchange         316-31           Vimco Manufacturing Company         27           Vogel Tool and Die Corporation         237
	w
Sales         Service         Machine         Tool         Company         290           Sanford         Manufacturing         Company         21         Schauer         Machine         Company         305         Scherr         Company         305         Schert Company         213         Schupack         Supply         Company         301         Scientific Lubricants         Company         240         Scully-Jones         & Company         276         Segal, Edward         189         Seneca         Falls         Machine         Company         145         Sentry         Company         201         Severance         Tool         Company         93         30         Severance         Tool         Company         93         30         Severance         Tool         Company         93         Severance         Tool         Company         93         Selector         Sele	Wade Instrument Company         24           Walker Company, O. S.         7           Walls Sales Corporation         18           Walton Company         24           Wardwell Manufacturing Company         29           Warner & Swasey Company         18           Webber Gage Company         19           Webt Point Manufacturing Company         19           White Dental Manufacturing Company         S. 31           Whitney Metal Tool Company         24           Wicaco Machine Corp.         28           Wilson, K. R.         9           Wirth & Son, Carl         17           Wittek Manufacturing Company         4           Woodworth Company, N. A.         4
Speedgrip Chuck, Incorporated 221 Sperman Metal Specialties 272	Y



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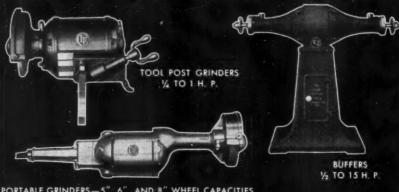
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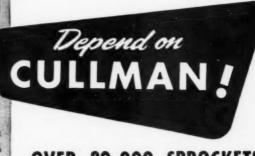
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